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=> d que 147

L40 52716 SEA FILE=WPIX ABB=ON ?LIGNIN? OR ?LIGNO? OR CONFERYL ALC? OR
SYRINGENIN?
L41 1596 SEA FILE=WPIX ABB=ON L40 AND (POLYACRYL OR POLYVINYL? OR
?GLYCOL?)
L42 4776 SEA FILE=WPIX ABB=ON L40 AND ?POLYMER?
L43 110 SEA FILE=WPIX ABB=ON (L41 OR L42) AND ELECTROLYT?
L44 25 SEA FILE=WPIX ABB=ON L43 AND BATTER?
L45 8 SEA FILE=WPIX ABB=ON L44 AND (FINE OR ULTRAFINE OR PARTIC?)
L46 18 SEA FILE=WPIX ABB=ON L44 AND H01M?/IC
L47 19 SEA FILE=WPIX ABB=ON L45 OR L46

=> d 147 full 1-19

L47 ANSWER 1 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN
AN 2006-051185 [06] WPIX
DNN N2006-044032 DNC C2006-019584
TI Lead storage **battery** has a container with gap connected to an
electrolyte liquid, and filled with organic **polymer**
which dissolves in **electrolyte** liquid, and raises hydrogen over
voltage of cathode at time of charging.
DC A85 L03 X16
IN KOZAWA, S; OKAYASU, T; YOSHIO, M
PA (KOZA-I) KOZAWA S; (MASE-I) MASE S; (OKAY-I) OKAYASU T
CYC 1
PI JP 2005353559 A 20051222 (200606)* 6 H01M010-12 <--

ADT JP 2005353559 A JP 2004-202491 20040611

PRAI JP 2004-202491 20040611

IC ICM H01M010-12

ICS H01M004-14; H01M004-62; H01M010-08

AB JP2005353559 A UPAB: 20060124

NOVELTY - The lead storage **battery** (3) has a container with gap connected to **electrolyte** liquid, and filled with organic **polymer** which dissolves in the **electrolyte** liquid, and raises hydrogen over voltage of cathode (4) at the time of charging.

The **electrolyte** liquid is **electrolyte** liquid containing dilute sulfuric acid as main component or **electrolyte** liquid containing organic **polymer** (0.01-0.2 weight%) having sulfuric acid as main component.

USE - As lead storage **battery**.

ADVANTAGE - The lead storage **battery** has favorable cathode active material activity for long period of time, and maintains concentration of organic **polymer** in **electrolyte** liquid at required value.

DESCRIPTION OF DRAWING(S) - The figure shows the sectional drawing of the lead storage **battery**.

cloth bag woven from glass fiber 1

organic **polymer** 2

lead storage **battery** 3

cathode 4

separator 5

Dwg.1/3

TECH JP 2005353559 AUPTX: 20060124

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Composition: The gap connected to the **electrolyte** liquid comprises glass fiber, polyethylene resin, polypropylene resin and/or fluoro resin. Preferred **Polymer**: The organic **polymer** is **polyvinyl** alcohol, polyacrylic acid and/or **lignin**.

FS CPI EPI

FA AB; GI

MC CPI: A12-E06; L03-E01B1; L03-E01C4

EPI: X16-B01B; X16-J02; X16-J07

L47 ANSWER 2 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 2005-477563 [48] WPIX

DNN N2005-388739 DNC C2005-145495

TI Production of coated silicon/carbon **particles** used as electrode active material in electrical storage cell, by coating **particles** of carbonaceous material with carbon residue forming material, and subjecting to oxidation reaction.

DC A85 L03 P42 P56 X16

IN CHAHAR, B; MAO, Z

PA (CHAH-I) CHAHAR B; (MAOZ-I) MAO Z; (CONO) CONOCOPHILLIPS CO

CYC 108

PI US 2005136330 A1 20050623 (200548)* 15 H01M004-58 <--

WO 2005065082 A2 20050721 (200551) EN C01B000-00

RW: AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IS IT
KE LS LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM
ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE
DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG
KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ
OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG
US UZ VC VN YU ZA ZM ZW

ADT US 2005136330 A1 US 2003-741381 20031219; WO 2005065082 A2 WO 2004-US38115 20041115

PRAI US 2003-741381 20031219

IC ICM C01B000-00; H01M004-58

ICS B05D007-00; B23P019-00; H01M002-00; H01M002-26;
H01M002-28; H01M006-00

AB US2005136330 A UPAB: 20050728

NOVELTY - Production of coated silicon/carbon **particles**, comprises coating silicon **particles** with carbon residue forming material; coating **particles** of carbonaceous material with carbon residue forming material; embedding coated silicon **particles** onto formed coated carbonaceous **particles**; coating formed silicon/carbon composite **particles** with carbon residue forming material; and stabilizing **particles** by subjecting to oxidation reaction.

DETAILED DESCRIPTION - Production of coated silicon/carbon **particles**, comprises:

- (1) providing a carbon residue forming material;
- (2) providing silicon **particles**;
- (3) coating the silicon **particles** with the carbon residue forming material to form coated silicon **particles**;
- (4) providing **particles** of a carbonaceous material;
- (5) coating the **particles** of carbonaceous material with the carbon residue forming material to form coated carbonaceous **particles**;
- (6) embedding the coated silicon **particles** onto the coated carbonaceous **particles** to form silicon/carbon composite **particles**;
- (7) coating the silicon/carbon composite **particles** with the carbon residue forming material to form coated silicon/carbon composite **particles**; and
- (8) stabilizing the coated composite **particles** by subjecting the coated composite **particles** to an oxidation reaction.

INDEPENDENT CLAIMS are also included for the following:

- (A) coated silicon/carbon composite **particles**, comprising a core of coated silicon and coated carbonaceous **particle** that is further coated with a layer of carbon residue forming material;
- (B) a method for the production of a lithium (Li)-ion **battery** where the coated carbonaceous **particles** are used as the anode material, and such Li-ion **battery** exhibits a first cycle charge efficiency greater than 90% at the cut-off potential of 1 volt versus Li when tested with **electrolyte** containing no propylene carbonate solvent;
- (C) an electrical storage cell comprising the coated carbonaceous **particles**;
- (D) a method for the manufacture of an electrical storage cell which comprises incorporating the coated composite **particles** into an anode of the electrical storage cell;
- (E) an anode of an electrical storage cell comprising the coated **particles**.

USE - For production of coated silicon/carbon **particles** for use as electrode active material in electrical storage cell that is a rechargeable electrical storage cell used as **battery** (claimed).

ADVANTAGE - The method provides high capacity and high efficiency carbon-coated silicon/carbon composite **particles** with smooth coatings. The **particles** have good powder flowability, which is **particularly** beneficial during the handling or manufacturing steps necessary to form these materials into useful electrodes.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic view of a composite carbon-silicon **particle**.

Dwg.1/5

TECH US 2005136330 A1UPTX: 20050728

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Process: The carbon residue forming material is provided in a solution comprising one or more solvents and the carbon residue forming material. The silicon **particles** and **particles** of a carbonaceous material are supplied as a suspension in a solution comprising one or more solvents before mixing with solution of carbon residue forming material. The process further comprises adding one or more solvents to the mixture of the solution of carbon residue forming material and the **particles**

; stabilizing the silicon **particles** after coating; or carbonizing the silicon **particles**. The **particles** are carbonized in an inert atmosphere at 400-1500degreesC. The solution of carbon residue forming material is mixed at an elevated temperature to dissolve the carbon residue forming material in one or more solvents. The oxidation reaction is carried out in the presence of an oxidizing agent. Preferred Material: The solvent is toluene, benzene, xylene, quinoline, tetrahydrofuran, tetrahydronaphthalene, naphthalene, methanol, acetone, methyl-pyrrolidinone, cyclohexane, ether or water.

Preferred Component: The carbonaceous **particles** comprise a pulverant carbonaceous material from petroleum pitches, calcined petroleum cokes, uncalcined petroleum cokes, highly crystalline cokes, coal tar cokes, synthetic graphites, natural graphites, soft carbons derived from organic **polymers**, or soft carbons derived from natural **polymers**.

Preferred Composition: The ratio of the one or more solvents to the carbon residue forming material in the mixture of the carbon residue forming material solution and the **particle** suspension is greater than or equal to2:1 (preferably greater than or equal to4:1).

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Material: The carbon residue forming material is a **polymeric** material from heavy aromatic residues from petroleum and coal of chemical processes, **lignin** from pulp industry, phenolic resins, or carbohydrate materials.

FS CPI EPI GMPI

FA AB; GI

MC CPI: A12-E06A; L03-E01B8

EPI: X16-B01; X16-E01C

L47 ANSWER 3 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 2005-338175 [35] WPIX

DNN N2005-276655 DNC C2005-105339

TI Charging method of lead storage **battery** used for motor vehicles, involves applying pulse current to **battery** having **electrolyte** liquid containing polyacrylic acid, **polyvinyl** alcohol and/or **lignin** granule.

DC A85 L03 X16

PA (MAZE-I) MAZE S; (OZAW-I) OZAWA A

CYC 1

PI JP 2005116493 A 20050428 (200535)* 6 H01M010-44 <--

ADT JP 2005116493 A JP 2003-383150 20031008

PRAI JP 2003-383150 20031008

IC ICM H01M010-44

ICS H01M010-08

AB JP2005116493 A UPAB: 20050603

NOVELTY - A pulse current is applied to lead storage **battery** having **electrolyte** liquid containing polyacrylic acid, **polyvinyl** alcohol and/or **lignin** granule, and **battery** is charged.

USE - For charging lead storage **battery** used for motor

vehicles.

ADVANTAGE - The lead storage **battery** containing organic **polymer** in the **electrolyte** liquid has favorable charging and discharging cycle characteristics and recovers **battery** characteristics rapidly by using charging current containing pulse. The **battery** characteristics are stably maintained for long period of time using inexpensive direct current power source for 1 year or more without changing the charger. The organic **polymer** prevents crystal growth of lead sulfate and therefore maintains the characteristics for long period of time even if the once recovered **battery** characteristics does not use pulse current for subsequent charging.

DESCRIPTION OF DRAWING(S) - The figure shows an example of the pulse wave used for charging lead storage **battery**. (Drawing includes non-English language text).

Dwg.1/4

FS CPI EPI

FA AB; GI

MC CPI: A03-A00A; A04-F04A; A10-E09B2; A12-E06; A12-E09; A12-T04C; L03-E01C1;
L03-E03; L03-H05
EPI: X16-B01B; X16-G01

L47 ANSWER 4 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 2005-331053 [34] WPIX

DNN N2005-270796 DNC C2005-102911

TI Preparation of thin film **battery** useful for integrated devices, involves vapor depositing cathode, **electrolyte**, and anode layers through flexible, repositionable, **polymeric** shadow mask.

DC A32 A85 L03 P42 X16 X25

IN BAUDE, P F; HAASE, M A; KELLEY, T W; MUYRES, D V; THEISS, S D

PA (MINN) 3M INNOVATIVE PROPERTIES CO

CYC 108

PI US 2005079418 A1 20050414 (200534)* 19 H01M006-00 <--

WO 2005041324 A2 20050506 (200534) EN H01M000-00 <--

RW: AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE
LS LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW

W: AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE
DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG
KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ
OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG
US UZ VC VN YU ZA ZM ZW

ADT US 2005079418 A1 US 2003-685725 20031014; WO 2005041324 A2 WO 2004-US27932
20040827

PRAI US 2003-685725 20031014

IC ICM H01M000-00; H01M006-00

ICS B05D005-12; C23C016-26; H01M004-58

AB US2005079418 A UPAB: 20050527

NOVELTY - Thin film **battery** is prepared by:

(A) providing a substrate;

(B) optionally depositing a cathode current collector;

(C) depositing a cathode layer, an **electrolyte** layer, and an anode layer; and

(D) optionally depositing an anode current collector layer and an encapsulant layer.

The layer(s) is vapor deposited through a flexible, repositionable, **polymeric** shadow mask.

DETAILED DESCRIPTION - **INDEPENDENT CLAIMS** are also included for:

(1) thin film **battery** prepared by the above method; and

(2) mask set for producing a thin film **battery** comprising a first aperture mask (10A) formed with three patterns (12A) of deposition apertures that define respective part of anode, cathode and

electrolyte layers.

USE - For preparing thin film **battery** useful for integrated circuit (claimed) and electronic devices.

ADVANTAGE - The inventive method is capable of producing thin film **battery** with reduce human error and increase throughput. The **battery** is produced solely using aperture mask deposition and without requiring ant etching or photolithography steps, which are used to form thin film **battery** patterns.

DESCRIPTION OF DRAWING(S) - The figure is a perspective view of an aperture mask wound into a roll.

Aperture mask 10A

Wind flexible film 11A

Patterns 12A

Roll of film 15A

Dwg.1/11

TECH US 2005079418 A1UPTX: 20050527

TECHNOLOGY FOCUS - CERAMICS AND GLASS - Preferred Material: The substrate layer can be glass substrate or silica substrate.

TECHNOLOGY FOCUS - ELECTRONICS - Preferred Material: The substrate layer can be integrated circuit.

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Method: The cathode and anode current collectors are deposited concurrently. The vapor-depositing step includes positioning the aperture mask proximate to the substrate. Each deposition step involves vapor deposition. The method includes the steps of **aligning** the substrate with the current collector mask, vapor depositing a current collector layer onto the substrate, **aligning** the substrate with an **electrolyte** mask, depositing the **electrolyte** layer, **aligning** the substrate with an anode mask, depositing the anode layer, and optionally depositing the encapsulant layer, in which this steps are repeated until desired number of **battery** cells has been deposited to produce a multicell **battery**. The cells are connected in series and/or parallel to produce a planar array or stacked column of thin film **batteries** on the substrate. The vapor depositing steps are sputtering, thermal evaporation, electron beam evaporation, chemical vapor depositing, metal organic chemical vapor depositing, combustion chemical vapor depositing and plasma enhanced chemical vapor, or pulsed laser deposition steps. The aperture mask is formed with a number of deposition mask patterns, which are formed with greater than or equal to 2 different mask patterns. It is flexible so that it can be wound to form a roll. Preferred Component: The substrate layer is **battery**. The aperture mask comprises an elongated web of flexible film where a deposition mask pattern is formed. The deposition mask pattern defines deposition apertures that extend through the film that define a portion of the **battery** cell. The current collector layer of the **battery** is shared with the source, drain, or gate electrode of the integrated circuit.

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Material: The substrate layer can be silicon substrate. The cathode is a lithium transition metal oxide, preferably amorphous vanadium oxide (V2O5), crystalline titanium sulfide (TiS2), lithium manganese oxide-containing compound (LiMn2O2, LiMnO2, LiMnO4, or Li_xMn2-yO4), lithium cobalt and nickel oxide-containing compound (LiCo0.2Ni0.8O2), lithium cobalt oxide-containing compound (LiCoO2), lithium vanadium oxide-containing compound (LiV3O8 or LiV2O5, or LiV3O13), or V2O5. The **electrolyte** is lithium phosphorus oxynitride. The anode layer is lithium metal, lithium intercalation compounds, silicon-tin oxynitride, tin, or gold.

TECHNOLOGY FOCUS - MECHANICAL ENGINEERING - Preferred Component: A drive mechanism is provided to move first and/or second webs relative to the other web. A deposition unit is provided to deposits onto the substrate through the deposition mask pattern defined by the **polymeric** aperture mask. An alignment mechanism aligns the deposition mask pattern of the **polymeric** aperture mask with the substrate prior to deposition. It is a stretching apparatus for stretching the **polymeric** aperture mask or substrate film to align the deposition mask pattern relative to the substrate or to the **polymeric** aperture mask, respectively.

TECHNOLOGY FOCUS - METALLURGY - Preferred Material: The anode layer can be tin/lead alloys.

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Material: The substrate layer can be silicon substrate. The cathode is a lithium transition metal oxide, preferably amorphous vanadium oxide (V2O5), crystalline titanium sulfide (TiS2), lithium manganese oxide-containing compound (LiMn2O2, LiMnO2, LiMnO4, or LiMn2-yO4), lithium cobalt and nickel oxide-containing compound (LiCo0.2Ni0.8O2), lithium cobalt oxide-containing compound (LiCoO2), lithium vanadium oxide-containing compound (LiV3O8 or LiV2O5, or LiV3O13), or V2O5. The **electrolyte** is lithium phosphorus oxynitride. The anode layer is lithium metal, lithium intercalation compounds, silicon-tin oxynitride, tin, or gold.

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Material: The substrate layer can be rigid or flexible **polymeric** substrate. The **polymeric** aperture mask comprises polyimide, polyester, polystyrene, polymethyl methacrylate, or polycarbonate **polymers**. The aperture mask comprises an elongated web of flexible film. the film is sufficiently flexible to be wound into a roll.

TECHNOLOGY FOCUS - TEXTILES AND PAPER - Preferred Material: The substrate layer can be paper substrate, woven substrate, or nonwoven substrate.

FS CPI EPI GMPI
FA AB; GI
MC CPI: A11-C04B; A12-E06; A12-E07C; L03-E01
EPI: X16-A; X16-E01C; X16-E02; X25-A04

L47 ANSWER 5 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN
AN 2004-782618 [77] WPIX
CR 2003-027874 [02]; 2003-731370 [69]; 2003-801676 [75]; 2004-387456 [36]
DNN N2004-616634 DNC C2004-273911
TI Composition useful in e.g. carrier media such as circuit boards comprises powder having specific average **particle** sizes; coating imparted to the powder **particles**; and carrier medium.
DC A18 A28 A85 G04 L03 U11 V04 X12 X16
IN GURIN, M H
PA (GURI-I) GURIN M H
CYC 1
PI US 2004206941 A1 20041021 (200477)* 15 H01B001-00
ADT US 2004206941 A1 CIP of US 2000-721074 20001122, CIP of WO 2001-US49758 20011220, Provisional US 2002-391601P 20020627, US 2003-603332 20030626
FDT US 2004206941 A1 CIP of US 6432320
PRAI US 2002-391601P 20020627; US 2000-721074 20001122;
WO 2001-US49758 20011220; US 2003-603332 20030626
IC ICM H01B001-00
AB US2004206941 A UPAB: 20041203
NOVELTY - A composition comprises powder having average **particle** sizes of nanometer - micron; coating imparted to the powder

particles; and carrier medium selected from carrier fluids, monomers, interpolymers, polymers, and phase change materials.

DETAILED DESCRIPTION - INDEPENDENT CLAIMS are included for:

(1) method (m1) transferring heat between a heat source and a heat sink involving interposing between the heat source and the heat sink a heat transfer composition comprising a surface-coated powder (P1), where the coating imparting improves thermal conductivity properties to (P1) relative to uncoated powder;

(2) method (m2) of transferring electrons between cathode, an electron source, anode and an electron sink involving interposing between the cathode and anode an electrically conductive composition comprising a surface-coated powder (P2), the coating imparting improves electrical conductivity properties to (P2) relative to uncoated powder;

(3) a powder having enhanced thermal and electrical conductivity comprising powder precursor having average particle sizes of nanometer - micron size produced by a process step selected from solubilized, dispersed, emulsified, grinded, spray atomized and vaporized; coating imparted to the powder precursor particles; and reaction medium selected from solvents, fluids, monomers, interpolymers, polymers, and phase change materials;

(4) in situ complexing of coating compound on powder precursor particles is prepared by one of: microemulsions and chemical reduction of pre-complexed metal salts; microemulsions and reduction of pre-complexed metal salts using sonochemistry; sonochemistry using high or ultrahigh frequency acoustic wave generation of cavitation in reaction vessel for reduction of pre-complexed metal salts; sonochemistry using high or ultrahigh frequency acoustic wave generation of cavitation onto plating surface through plating by electroless deposition of pre-complexed metal salts; sonochemistry using high or ultrahigh frequency acoustic wave generation of cavitation onto plating surface through plating deposition by electrolysis of pre-complexed metal salts; sonochemistry using high or ultrahigh frequency acoustic wave generation of cavitation onto plating surface through plating deposition by electrolysis of pre-complexed metal salts using high frequency electrical power source; submicron atomization of pre-complexed metal salts in liquid carrier with in situ chemical reduction; submicron atomization of pre-complexed metal salts in liquid carrier with in situ electrochemical reduction; submicron atomization of pre-complexed metal salts in liquid carrier within vessel with voltage potential between atomizer and cathode; plasma processing of powder precursor with quenching in liquid carrier having pre-solubilized complexing coating compound; combustion synthesis processing of powder precursor with quenching in liquid carrier having pre-solubilized complexing coating compound; pre-complexed powder precursor dissolved in supercritical fluid with in situ chemical reduction; pre-complexed powder precursor dissolved in supercritical fluid with in situ electrochemical reduction; electrolysis of pre-complexed metal salts using high frequency electrical power source on anode and cathode; electrolysis of pre-complexed metal salts using electrically conductive material selected from group of electrolyte or conductive polymer; high pressure hydrogen chemical reduction reaction of powder precursor in liquid carrier having pre-solubilized complexing coating compound; high pressure hydrogen chemical reduction reaction of powder precursor in liquid carrier having pre-solubilized complexing coating compound in combination with high or ultrahigh frequency acoustic wave generation of cavitation in reaction vessel; high pressure hydrogen chemical reduction reaction of powder precursor in liquid carrier having pre-solubilized complexing coating compound in combination with high or ultrahigh frequency electromagnetic force generation in reaction vessel; cryogenic embrittlement in combination with processes selected from high pressure

hydrogen embrittlement, or high/ultrahigh frequency acoustic wave generation of cavitation in reaction vessel; or electrodialysis of pre-complexed metal salts in combination with processes selected from the group of high pressure hydrogen embrittlement, or high/ultrahigh frequency acoustic wave generation of cavitation on cathode.

USE - For enhancing the thermal conductivity, coefficient of thermal heat transfer, electrical conductivity in a carrier media e.g. circuit boards, conductive inks, electromagnetic and radio frequency protective coatings, fuel cells, **battery** systems and paints; and in heat transfer media e.g. engine cooling, heating, air conditioning, refrigeration, thermal storage, in heat pipes, fuel cells, **battery** systems, hot water, steam systems, and microprocessor cooling systems.

ADVANTAGE - The composition has enhanced thermal and electrical conductivity, and energy efficiency of host carrier. The coating provides stabilization, corrosion resistance and dispersant. Resources are reduced by utilizing standard plastic and sintering production processes. Coated compound is readily dispersed in the carrier medium. Stabilization and passivation of the coated compound enables direct immersion into corrosive environments. The coated compound maintains a mobile colloidal dispersion within the phase change material, enabling the coated compound to be utilized without the use of dispersion enhancement devices in a host carrier system.

Dwg.0/0

TECH US 2004206941 A1UPTX: 20041203

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Components: The coating further comprises an inorganic corrosion inhibitor compound. The powder is a carbon powder. The coating is selected from alkali metal salts, alkali earth metal salts, ammonium salts, and alkyl ether phosphates.

TECHNOLOGY FOCUS - METALLURGY - Preferred Components: The powder is selected from metal, metal alloy, organic metal compounds, inorganic metal compounds and/or carbon (preferably metals selected from copper, titanium, nickel, beryllium, iron, silver, gold, their alloys, blends, and compounds; carbons selected from graphite, carbon nanotubes, diamond, fullerene carbons of the general formula $(C_2)_n$, and their blends). The powder selected from aluminum and aluminum alloys. The coating further comprises a cerium compound. The powder is selected from copper, silver, iron, steel and their alloys.

$n =$ at least 30.

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Components: The coating further comprises a coating acting as at least one of imparting composition stabilization, corrosion resistance and acting as a dispersant. The coating acts as dispersant of the powder in the carrier medium by at least one of increasing settling time of the powder, passivating the powder, reducing interfacial tension of the powder and increases adhesion to the powder. The powder further comprises an average **particle** size of less than 10 microns (preferably 10 nm - 2 μ m). The carrier medium is selected from solids, fluids, phase change materials and **interpolymer**. The carrier medium further comprises a phase change medium selected from salt-hydrates, organic eutectics, clathrate-hydrates, paraffins, hydrocarbons, Fischer-Tropsch hard waxes, inorganic eutectic mixtures, acetamide, methyl fumarate, myristic acid, Glauber's salt, paraffin wax, fatty acids, methyl-esters, methyl palmitate, methyl stearate, mixtures of short-chain acids, capric and lauric acid, coconut fatty acids, propane and methane. The coating is selected from azoles, benzotriazole, tolytriazole, halogen resistant azoles, and their substituted derivatives. The powder is a carbon powder and the coating further comprises a **lignin**-based compound, ethylene oxide/propylene oxide (EO/PO) block **copolymers**, anionic surfactants, ionic surfactants and nonionic surfactants. The coating is

selected from mercapto-substituted thiodiazoles, amino-substituted thiodiazoles, and mercapto-substituted triazole, amino-substituted triazoles, oleyl imidazoline, triethanolamine and monoethanolamine. The **lignin**-based compound further comprises at least one of a monovalent salt of **lignin**, free acid **lignin**, polyvalent metal salts of **lignin**, **lignin** sulfonic acid, alkali metal salts of **lignin** sulfonic acid, alkaline earth metal salts of **lignin** sulfonic acid, and ammonium salts of **lignin** sulfonic acid. Preferred Method: (m1) Involves suspending the coated powder in a heat transfer medium. The surface-coated powder is prepared by complexing a coating compound with powder **particles**; adsorbing a coating compound on surfaces of the powder **particles**; or imparting a metal coating onto surfaces of powder **particles** and subsequently complexing the metal coating with another coating. The coating compound forms at least a molecular monolayer of the coating compound on surfaces of the powder **particles**. (m2) involves suspending the coated powder in an electrically conductive medium.

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Components: The coating further comprises an inorganic corrosion inhibitor compound. The powder is a carbon powder. The coating is selected from alkali metal salts, alkali earth metal salts, ammonium salts, and alkyl ether phosphates.

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Components: The **interpolymer** is prepared by **polymerizing** alpha-olefin monomer with vinylidene aromatic monomer and aliphatic vinylidene monomers with a volume ratio of 10:1 - 1:100 and a weight percent of 99 - 1% (preferably prepared with **polymerizable** ethylenically unsaturated monomer). The carrier medium is selected from 98 compounds given in specification e.g. conjugated **polymers**.

ABEX US 2004206941 A1UPTX: 20041203

SPECIFIC COMPOUNDS - TRY - Preferred Components: The coating further comprises a coating acting as at least one of imp

EXAMPLE - A solution of COBRATEC TT 100 (RTM; tolyltriazole) was dissolved in a volatile organic solvent comprising 2-butanone and stirred on a magnetic stirring hot plate. Cu 110 (RTM; copper powder) (3 weight%) was reduced to a powder of an average particle size of 50 nanometers. The resulting copper powder was slurried in the solution for about 15 minutes at 50 - 55degreesC. The coated product was isolated by filtration, washed once with solvent and then dried in air or by oven drying. The product showed enhanced thermal transfer properties and dispersion characteristics when combined with heat transfer media as compared with an untreated copper powder.

FS CPI EPI

FA AB

MC CPI: A08-M; A12-E01; A12-W11G; G04-B01; L03-A01A3; L03-A02; L03-H04E4
EPI: U11-D02B; V04-R02P; V04-T03A; V04-T03H; V04-T03P; V04-U01; X12-D01;
X12-D01X; X16-C

L47 ANSWER 6 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 2004-237892 [22] WPIX

CR 2004-097627 [10]

DNN N2004-188621 DNC C2004-092968

TI Electrochemical lead-acid **battery** comprises **electrolyte** having organic **polymer**, and ultra **fine lignin** having specified **particle size**.

DC A85 L03 X16

IN HRADA, H; KOZAWA, A; YOKOI, G

PA (HRAD-I) HRADA H; (KOZA-I) KOZAWA A; (YOKO-I) YOKOI G

applicants

CYC 108

PI US 2004033422 A1 20040219 (200422)* 10 H01M010-08 <--
WO 2004105161 A2 20041202 (200479) EN H01M002-16 <--
RW: AT BE BG BW CH CY CZ DE DK EA EE ES FI FR GB GH GM GR HU IE IT KE
LS LU MC MW MZ NA NL OA PL PT RO SD SE SI SK SL SZ TR TZ UG ZM ZW
W: AE AG AL AM AT AU AZ BA BB BG BR BW BY BZ CA CH CN CO CR CU CZ DE
DK DM DZ EC EE EG ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG
KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NA NI NO NZ
OM PG PH PL PT RO RU SC SD SE SG SK SL SY TJ TM TN TR TT TZ UA UG
US UZ VC VN YU ZA ZM ZW

JP 2004356076 A 20041216 (200482) 4 H01M010-42 <--

JP 2004356077 A 20041216 (200482) 3 H01M010-54 <--

ADT US 2004033422 A1 CIP of US 2003-439258 20030515, US 2003-634592 20030805;
WO 2004105161 A2 WO 2004-IB1727 20040526; JP 2004356076 A JP 2003-185790
20030526; JP 2004356077 A JP 2003-185791 20030526

PRAI JP 2003-185791 20030526; JP 2002-141177 20020516;
JP 2003-185790 20030526

IC ICM H01M002-16; H01M010-08; H01M010-42;
H01M010-54

ICS C25C001-22; H01M010-44

AB US2004033422 A UPAB: 20041223

NOVELTY - An electrochemical lead-acid **battery** comprises
electrolyte having organic **polymer**, and ultra
fine lignin having **particle** size between
0.01-0.8 micron.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a
process of charging a lead-acid **battery** comprising adding to the
electrolyte of the **battery** an organic **polymer**
(s), and discharging the **battery** at a high current rate of at
least 0.3C for at least 5 minutes.

USE - For use as electrochemical lead-acid **battery**.

ADVANTAGE - The invention has long life, and can be recharged to
enhance its new power properties.

Dwg.0/4

TECH US 2004033422 A1UPTX: 20040331

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Component: The
electrolyte contains additional additive from silicone compounds,
indium, tin, lead sulfate, and/or barium sulfate. It further includes
antimony as impurity.

Preferred Property: The ultra **fine lignin** has a
particle size between 0.1-0.6 micron.

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Component: The organic
polymer is from polyacrylic acid or its **copolymers**,
polyvinyl alcohol, or ethylene **glycol**.

Preferred Composition: The **polymer** is present in aqueous
solution at 0.1-13% in water. The additional additive is present between
0.01-0.1%/12-volt 50-ampere **battery**.

FS CPI EPI

FA AB

MC CPI: A03-C02; A12-E06; A12-M; L03-E01B1; L03-E01C1

EPI: X16-B01B

L47 ANSWER 7 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 2004-097627 [10] WPIX

CR 2004-237892 [22]

DNN N2004-077753 DNC C2004-040513

TI Electrochemical lead acid **battery** for vehicles comprises
electrolyte containing organic **polymer** and
ultrafine lignin having preset **particle** size.

DC A85 L03 X16
IN HARADA, H; KOZAWA, A; YOKOL, G
PA (OZAW-I) OZAWA A; (TAKE-N) TAKEHARA KK; (YOKO-N) YOKOI KAIHATSU KK;
(HARA-I) HARADA H; (KOZA-I) KOZAWA A; (YOKO-I) YOKOL G
CYC 2
PI US 2003228525 A1 20031211 (200410)* 10 H01M010-08 <--
JP 2003331908 A 20031121 (200410) 3 H01M010-08 <--
ADT US 2003228525 A1 US 2003-439258 20030515; JP 2003331908 A JP 2002-141177
20020516

PRAI JP 2002-141177 20020516

IC ICM H01M010-08

ICS H01M010-44

AB US2003228525 A UPAB: 20040331

NOVELTY - The electrochemical lead acid **battery** comprises an **electrolyte** containing an organic **polymer** and an **ultrafine lignin** having a **particle size** of 0.01-0.8 μ m.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for process of charging lead acid **battery** containing **electrolyte** and active components.

USE - For vehicles e.g. cars, trucks, buses, forklifts and golf carts, solar power generated electricity storage and hybrid cars.

ADVANTAGE - The electrochemical lead acid **battery** has excellent durability, high rate charging-discharging property, high rate discharge current and increased operation time. The **battery** has favorable activation effect due to the presence of **ultrafine lignin particles**.

DESCRIPTION OF DRAWING(S) - The figure shows the plot of a curve of the specific gravity of the **electrolyte** of a **battery** and its voltage.

Dwg.1/4

TECH US 2003228525 A1UPTX: 20040210

TECHNOLOGY FOCUS - **POLYMERS** - Preferred **Polymers**: The organic **polymers** are polyacrylic acid or its **copolymers**, **polyvinyl alcohol** and/or ethylene **glycol**.

FS CPI EPI

FA AB; GI

MC CPI: A12-E06; A12-E09; L03-E01B1; L03-E01C4

EPI: X16-B01B; X16-G; X16-J02

L47 ANSWER 8 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 2003-807541 [76] WPIX

DNN N2003-647279 DNC C2003-223698

TI Lead storage **battery** for truck, contains indium in **electrolyte** liquid and/or electrode active material compact.

DC A85 L03 X16 X22

PA (OZAW-I) OZAWA S; (TAGA-I) TAGAWA K

CYC 1

PI JP 2003151618 A 20030523 (200376)* 4 H01M010-08 <--

ADT JP 2003151618 A JP 2001-382340 20011109

PRAI JP 2001-382340 20011109

IC ICM H01M010-08

ICS H01M004-62

AB JP2003151618 A UPAB: 20031125

NOVELTY - A lead storage **battery** contains 1-1,000 ppm of indium in an **electrolyte** liquid and/or electrode active material compact.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for additive which contains 2 ppm or more of indium.

USE - Lead storage **battery** for trucks.

ADVANTAGE - The reduction of **battery** capacity due to repeated charging and discharging is prevented. The lead storage **battery** has prolonged life. The decomposition of inactive lead sulfate is promoted by preventing generation of hydrogen.

DESCRIPTION OF DRAWING(S) - The graph compares polarization property of **battery** comprising negative electrode containing indium with conventional **battery**. (Drawing includes non-English language text).

Dwg.1/1

TECH JP 2003151618 AUPTX: 20031125

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Composition: The additive further contains 0.01-5% of **polyvinyl** alcohol, 0.01-2% of **polyethylene glycol**, 0.01-0.5% of **polymethyl acrylate** and/or 0.01-2% of **lignin**.

ABEX JP 2003151618 AUPTX: 20031125

EXAMPLE - A lead storage battery comprising 5% **polyvinyl** alcohol solution (50 cc) and mixed aqueous solution (10 cc) of tin sulfate and indium sulfate was manufactured. Reduction in capacitance was not observed even when the battery was repeatedly charged and discharged for 10 days.

FS CPI EPI

FA AB; GI

MC CPI: A12-E06; L03-E01B1

EPI: X16-B01B; X16-E04; X16-E09; X22-F01; X22-P05B

L47 ANSWER 9 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 2003-605329 [57] WPIX

CR 1996-401583 [40]; 1997-131785 [12]; 1997-297340 [27]; 1997-513001 [47]; 2001-158272 [16]; 2001-354186 [37]; 2001-380246 [40]; 2001-496160 [54]; 2001-513669 [56]; 2001-513670 [56]; 2001-529015 [58]; 2001-549556 [61]; 2001-601149 [68]; 2003-502657 [47]; 2004-623304 [60]; 2004-632742 [61]; 2004-793559 [78]; 2004-831008 [82]

DNN N2003-482568 DNC C2003-164681

TI Negative plate element for lead acid **battery**, has negative active material and macroporous organic **polymer particles** having functional groups with affinity for lead and **electrolyte** soluble metal impurity ion(s) that are more noble than lead.

DC A85 L03 X16

IN CLOUGH, T J

PA (ENSC-N) ENSCI INC

CYC 1

PI US 6517969 B1 20030211 (200357)* 11 H01M006-04 <--

ADT US 6517969 B1 Div ex US 1996-675395 19960702, CIP of US 1998-45726 19980320, Div ex US 1998-98044 19980616, US 2001-865662 20010529

FDT US 6517969 B1 Div ex US 5759716, CIP of US 6190799, Div ex US 6268081

PRAI US 1998-98044 19980616; US 1996-675395 19960702; US 1998-45726 19980320; US 2001-865662 20010529

IC ICM H01M006-04

AB US 6517969 B UPAB: 20041223

NOVELTY - A negative plate element for a lead acid **battery**, comprises a negative active material and macroporous organic **polymer particles** with functional groups having an affinity over lead ion and **electrolyte** soluble metal impurity ion(s) nobler than lead. The **polymer particles** are in contact with the **electrolyte** to allow the ion to permeate the internal surface of the **polymer particles**.

DETAILED DESCRIPTION - A negative plate element useful in a lead acid **battery** comprises a negative active material, an organic expander and an acid resistant metal impurity-inhibiting amount of macroporous organic **polymer particles**. The macroporous organic

polymer particles have internal surfaces and functional groups on the internal surfaces. The functional groups have a preferential affinity over lead ions and for at least one **electrolyte** soluble metal impurity ion that is more noble than lead at the discharge charge electrochemical and sulfuric acid molarity conditions of the **battery** provided such that the metal impurity ion is not substantially detrimentally desorbed or released from the functional groups under the conditions. Soluble lead ion has a substantially reduced affinity for bonding with the functional groups. The organic microporous organic **polymer particles** are associated with the negative active material and in contact with the metal impurity ion-containing **electrolyte** to allow the ion to substantially permeate the internal surfaces of the macroporous organic **polymer particles**.

USE - The negative plate element is useful in a lead acid **battery**.

ADVANTAGE - The plate element inhibits the detrimental effect of soluble metal impurity on the negative plate. It has improved overall utilization efficiency and the utilization of sulfuric acid **electrolyte** during discharge of the **battery**. It has improved capacity maintenance of the negative active material in a lead acid **battery**.

Dwg.0/0

TECH US 6517969 B1 UPTX: 20030906

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Component: The macroporous organic **polymer particles** have acid functional groups, which are metal impurity complexing. Preferred **Polymer**: The macroporous organic **polymer particles** are crosslinked polystyrene and the crosslinking is by divinylbenzene. The macroporous organic **polymer particles** have thiouranium functional groups.

TECHNOLOGY FOCUS - **INORGANIC CHEMISTRY** - Preferred Component: The metal impurity comprises antimony, nickel, cobalt, iron or preferably silver.

TECHNOLOGY FOCUS - **ORGANIC CHEMISTRY** - Preferred Component: The organic expander comprises **lignin** sulfonic acid and/or **lignin** sulfonate.

TECHNOLOGY FOCUS - **ELECTRICAL POWER AND ENERGY** - Preferred Component: The negative plate element further comprises a macroporous additive **particle** with a reduced affinity for bonding with the negative active material for promoting **electrolyte** diffusion to the expander component and macroporous organic **polymer**.

ABEX US 6517969 B1 UPTX: 20030906

EXAMPLE - Negative paste batches were prepared by mixing dry Barton mill lead oxide (10 lbs), pasting fibers, an expander (a sulfonate lignin), barium sulfate and carbon black at a concentration of 2 weight% lead oxide at an expander weight ratio of 1.2 weight% lignosulfinate, 0.4 weight% barium sulfate and 0.4 weight% carbon black basis dry lead oxide and organic polymer having phosphonic functionality at a concentration of 2 weight% basis dry lead oxide for 5 minutes. The organic polymer having phosphonic functionality was crosslinked polystyrene having amino methylene phosphonic acid groups present on the aromatic rings. A measured quantity of water was added to make the paste precursor and was mixed. Pasting acid was continuously added to the paste precursor at a rate of 0.6-0.9 ml/second. For the negative paste mix, the pasting acid was added over 10-13 minutes. After acid addition was complete, the paste batch was mixed for an additional period of time to allow the temperature to be reduced to 110degreesF. The paste was applied to negative grids at a constant

thickness as determined by the grid thickness. Following pasting, the plates were cured in curing chambers, and the positive and negative plates, and separator was assembled into 2V cells. An improvement in capacity maintenance was obtained.

FS CPI EPI

FA AB

MC CPI: A12-E06A; L03-E01B1

EPI: X16-B01B; X16-E02; X16-E04; X16-E09

L47 ANSWER 10 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 2003-597231 [56] WPIX

DNN N2003-475969 DNC C2003-161759

TI Manufacture of **battery** electrodes for **battery** for e.g. vehicles, involves calculating desired **battery** electrode porosity, creating paste mixture in response to porosity, applying paste mixture to grid, and curing electrode.

DC A85 L03 X16

IN BROST, R D; DEXTER, D R

PA (BROS-I) BROST R D; (DEXT-I) DEXTER D R; (FORD) FORD GLOBAL TECHNOLOGIES LLC

CYC 1

PI US 2003091898 A1 20030515 (200356)* 19 H01M004-04 <--

US 6656234 B2 20031202 (200379) H01M004-04 <--

ADT US 2003091898 A1 US 2001-963255 20010926; US 6656234 B2 US 2001-963255 20010926

PRAI US 2001-963255 20010926

IC ICM H01M004-04

AB US2003091898 A UPAB: 20030903

NOVELTY - **Battery** electrodes are made by:

(a) calculating a desired **battery** electrode porosity;

(b) creating a paste mixture in response to the **battery** electrode porosity;

(c) applying the paste mixture to a grid to form an electrode; and

(d) curing the electrode.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is included for a method of calculating a desired porosity of **battery** electrodes of a **battery** during manufacturing of the **battery** electrodes using an electrochemical model and a thermal model of a **battery**, comprising determining energy and current requirements of the **battery**; determining **battery** characteristics in response to the energy and current requirements; determining porosity of the **battery** electrodes by solving equations within the electrochemical model and the thermal model; varying porosity of the **battery** electrodes until voltage potential across the **battery** varies by less than a predetermined tolerance factor for an operating range state of change; creating a paste mixture in response to the optimum **battery** electrode porosity; applying the paste mixture to grid to form an electrode; and curing the electrode.

USE - For manufacturing **battery** electrodes for a **battery** for, e.g. vehicles.

ADVANTAGE - The method creates desirable **battery** electrode porosity for a given set of **battery** characteristics and application parameters.

DESCRIPTION OF DRAWING(S) - The figure shows a flow chart illustrating a method of manufacturing **battery** electrodes of a **battery**.

Dwg.1/10

TECH US 2003091898 A1UPTX: 20030903

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Method: The method father comprises solving equations that represent

electrolyte flow and diffusion and **electrolyte** permeability.

Preferred Condition: The desired **battery** electrode porosity is calculated by analyzing an application to determine application specific **battery** performance requirements. It also involves determining the appropriate elements, compounds and materials to use for the **battery** electrodes, and determining a desired **electrolyte** content. It is also calculated using an electronic simulation model or a computer. The porosity is varied by, adjusting the porosity of a **battery** component comprising an anode, a cathode, and a separator.

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Material: The elements, compounds and materials to use for electrodes comprise sulfino-**lignin**, barium sulfate, lead dioxide, sulfuric acid, lead monoxide, water, carbon black, sodium sulfate, graphite, titanium sub-oxide, dispersant or red lead.
Preferred Component: The **electrolyte** comprises sodium sulfate, sulfuric acid or lead sulfate.

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Material: The materials to be used for electrodes may also comprise plastic fibers or **polymer** fibers.

TECHNOLOGY FOCUS - CERAMICS AND GLASS - Preferred Material: The material to be used for electrodes may also be glass fiber.

FS CPI EPI
FA AB; GI
MC CPI: A11-B05; A11-C02C; A12-E06A; L03-E01B
EPI: X16-E; X16-E01G

L47 ANSWER 11 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN
AN 2003-502657 [47] WPIX
CR 1996-401583 [40]; 1997-131785 [12]; 1997-297340 [27]; 1997-513001 [47];
2001-158272 [16]; 2001-354186 [37]; 2001-380246 [40]; 2001-496160 [54];
2001-513669 [56]; 2001-513670 [56]; 2001-529015 [58]; 2001-549556 [61];
2001-601149 [68]; 2003-605329 [57]; 2004-623304 [60]; 2004-632742 [61];
2004-793559 [78]; 2004-831008 [82]
DNN N2003-398925 DNC C2003-134186
TI Negative plate useful in lead acid **battery** comprises acid
resistant metal impurity inhibiting amount of macroporous organic
polymer particles having internal surfaces and
chemically different functional groups.
DC A85 L03 X16
IN CLOUGH, T J
PA (ENSC-N) ENSCI INC
CYC 1
PI US 6511771 B1 20030128 (200347)* 11 H01M006-04 <--
ADT US 6511771 B1 Div ex US 1996-675395 19960702, CIP of US 1998-45726
19980320, Div ex US 1998-98044 19980616, US 2001-865922 20010529
FDT US 6511771 B1 Div ex US 5759716, CIP of US 6190799, Div ex US 6268081
PRAI US 1998-98044 19980616; US 1996-675395 19960702;
US 1998-45726 19980320; US 2001-865922 20010529
IC ICM H01M006-04
AB US 6511771 B UPAB: 20041223
NOVELTY - A negative plate useful in a lead acid **battery**
comprises an organic expander and an acid resistant metal impurity
inhibiting amount of macroporous organic **polymer**
particles, having internal surfaces and chemically different
functional groups on the internal surfaces.
DETAILED DESCRIPTION - A negative plate useful in lead acid

battery comprises negative active material, an organic expander, and an acid resistant metal impurity inhibiting amount of macroporous organic **polymer particles**, having internal surfaces and chemically different functional groups on the internal surfaces. The functional groups have a preferential affinity over lead ion for **electrolyte** soluble metal impurity ion(s) more nobler than lead at the discharge charge electrochemical and sulfuric acid molarity conditions of the **battery**. The metal impurity ion is not detrimentally desorbed or released from the functional groups under those conditions. The soluble lead ion has a reduced affinity for bonding with the functional groups. The macroporous organic **polymer particles** are associated with the negative active material, and in contact with the metal impurity ion containing **electrolyte**, to allow the ion to permeate the internal surfaces of the macroporous organic **polymer particles**.

USE - For lead acid **battery** (claimed).

ADVANTAGE - The detrimental effects of antimony on the inventive negative plate is inhibited. The invention has improved utilization efficiency of the active material, utilization of sulfuric acid **electrolyte** during discharge, and overall capacity maintenance of the negative active material of lead acid **battery**.

Dwg.0/0

TECH US 6511771 B1 UPTX: 20030723

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Component: The negative plate comprises a macroporous additive **particle** with a reduced affinity for bonding with the negative active material for promoting **electrolyte** diffusion to the expander component and the macroporous organic **polymers particles**.

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Component: The macroporous organic **polymer particles** have aliphatic amine and acid functional groups.

Preferred Condition: The functionality is metal impurity complexing.

Preferred Material: The macroporous organic **polymer particles** are cross-linked polystyrene. The cross-linking is by divinylbenzene. The organic expander is **lignin** sulfonic acid, and/or **lignin** sulfonate.

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Material: The metal impurity is silver, iron, nickel, cobalt, or preferably antimony.

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Material: The aliphatic amine functional groups are from secondary amine, and/or tertiary amine.

ABEX US 6511771 B1 UPTX: 20030723

EXAMPLE - Negative paste batches were prepared by mixing (weight%) dry leady oxide basis: a dry barton mill leady oxide (2), pasting fibers, an expander comprising an organic expander (weight ratio of 1.2 weight% lignosulfate), barium sulfate (0.4) and carbon black (0.4), and an organic polymer (2) having phosphonic functionality, for approximately 5 minutes. Water was added to make the paste precursor. Pasting acid was added. The paste batch was mixed for an additional period of time to allow the temperature to be reduced to 110degreesF. Pastes were applied to negative grids. The plates were cured, and positive and negative plates and separator were assembled into 2-volt cells, to obtain improvement in capacity maintenance.

FS CPI EPI

FA AB

MC CPI: A12-E06; L03-E01B9A

EPI: X16-E04

L47 ANSWER 12 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN
AN 2002-285542 [33] WPIX
DNN N2002-223276 DNC C2002-083885
TI Lead storage **battery** for use in electric vehicle, has addition agent that contains polyacrylic acid or polyacrylic ester, in the **electrolyte** and molded active negative plate casting.
DC A14 A85 L03 X16
PA (MASE-I) MASE S; (OZAW-I) OZAWA A; (TAGA-I) TAGAWA K
CYC 1
PI JP 2001313064 A 20011109 (200233)* 4 H01M010-08 <--
ADT JP 2001313064 A JP 2000-169775 20000428
PRAI JP 2000-169775 20000428
IC ICM H01M010-08
ICS H01M004-14; H01M004-62
AB JP2001313064 A UPAB: 20020524
NOVELTY - The lead storage **battery** has addition agent that contains polyacrylic acid, polyacrylic ester, **polyvinyl** alcohol, soluble lignin, sulfuric acid or colloidal lead sulfate, in the **electrolyte** and a molded active negative plate casting.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for addition agent for lead storage **battery**.
USE - For use in electric vehicle, UPS.
ADVANTAGE - Reduction of **battery** capacity due to repeated charging and discharging is prevented, due to the presence of the addition agent in the **electrolyte**, thus the life of **battery** is increased.
DESCRIPTION OF DRAWING(S) - The figure shows a comparison graph of hydrogen overvoltage of the **battery** addition agent with the conventional product. (Drawing includes non-English language text).
Dwg.1/2
FS CPI EPI
FA AB; GI
MC CPI: A03-C02; A04-F04; A04-F06E; A10-E09B; A12-E06; L03-E01B1; L03-E01C
EPI: X16-B01B; X16-E04; X16-E09; X16-J02; X16-J07

L47 ANSWER 13 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN
AN 2001-601149 [68] WPIX
CR 1996-401583 [40]; 1997-131785 [12]; 1997-297340 [27]; 1997-513001 [47]; 2001-158272 [16]; 2001-354186 [37]; 2001-380246 [40]; 2001-496160 [54]; 2001-513669 [56]; 2001-513670 [56]; 2001-529015 [58]; 2001-549556 [61]; 2003-502657 [47]; 2003-605329 [57]; 2004-623304 [60]; 2004-632742 [61]; 2004-793559 [78]; 2004-831008 [82]
DNN N2001-448376 DNC C2001-178161
TI Negative **battery** plate for lead acid **battery**, e.g. for vehicle, includes acid-resistant porous organic **polymer** having phosphonic functional groups and macroporous additive **particles**.
DC A85 L03 X16 X22
IN CLOUGH, T J
PA (ENSC-N) ENSCI INC
CYC 1
PI US ~~6268081~~ B1 20010731 (200168)* 10 H01M004-60 <--
ADT US 6268081 B1 Div ex US 1996-675395 19960702, CIP of US 1998-45726 19980320, US 1998-98044 19980616
FDT US 6268081 B1 Div ex US 5759716, CIP of US 6190799
PRAI US 1998-98044 19980616; US 1996-675395 19960702;
US 1998-45726 19980320
IC ICM H01M004-60
AB US 6268081 B UPAB: 20041223
NOVELTY - A **battery** plate comprises a negative active material; an organic sulfonic **polymeric** expander component; an

acid-resistant porous organic **polymer** having phosphonic functional groups; and macroporous additive **particles** with reduced affinity for bonding with negative active material for promoting **electrolyte** diffusion to the expander and organic **polymer**

USE - For use in a lead acid **battery** e.g. for vehicle.

ADVANTAGE - The negative plate that includes an organic **polymer** having phosphonic functionality has improved capacity maintenance. The detrimental effect of soluble metal impurity on the negative plate is inhibited. The macroporous additive **particles** improve overall utilization efficiency and the utilization of sulfuric acid **electrolyte** during discharge of the **battery**.
Dwg.0/0

TECH US 6268081 B1 UPTX: 20011121

TECHNOLOGY FOCUS - **POLYMERS** - Preferred **Polymer**: The organic **polymer** has amino (bis)alkylene (preferably (bis)methylene) phosphonic functional groups. It is a polystyrene cross-linked by divinylbenzene.

TECHNOLOGY FOCUS - ORGANIC CHEMISTRY - Preferred Component: The organic expander is **lignin** sulfonic acid and/or **lignin** sulfonate.

TECHNOLOGY FOCUS - INORGANIC CHEMISTRY - Preferred Component: The **battery** plate further comprises barium sulfate.

ABEX US 6268081 B1 UPTX: 20011121

EXAMPLE - A negative paste was prepared by mixing lead oxide (10 pounds), sulfonated lignin as organic expander, barium sulfate, and carbon black, at a concentration of 2 weight% lead oxide in an expander weight ratio of 1.2 weight% sulfonated lignin, 0.4 weight% barium sulfate and 0.4 weight% carbon black (based on dry lead oxide), and an organic polymer having phosphonic functionality at a concentration of 2 weight% (based on dry lead oxide). The organic polymer was a cross-linked polystyrene having amino methylene phosphonic acid groups on the aromatic rings. The paste was applied to negative grid, cured, and assembled into a 2-volt cell. An improvement in capacity maintenance was obtained.

FS CPI EPI

FA AB

MC CPI: A12-E06; L03-E01B9

EPI: X16-B01B; X16-E09; X16-F02; X22-F01

L47 ANSWER 14 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 2001-321031 [34] WPIX

DNN N2001-230773 DNC C2001-099101

TI Optoelectric conversion element for solar **battery** includes an organic polysilane compound conductive layer formed between an upper optoelectric layer carrying an electrode layer and a lower counterelectrode layer.

DC A26 A85 L03 U12 V01 X16

IN FUJITA, Y; KAWASE, Y

PA (SHAF) SHARP KK

CYC 2

PI JP 2001053355 A 20010223 (200134)* 10 H01L051-10

US 2003042472 A1 20030306 (200320) H01B001-00

ADT JP 2001053355 A JP 1999-224066 19990806; US 2003042472 A1 Div ex US 2000-629838 20000731, US 2002-272935 20021018

PRAI JP 1999-224066 19990806

IC ICM H01B001-00; H01L051-10

ICS H01G009-00; H01G009-20; H01L031-04; H01L031-08; H01M014-00

AB JP2001053355 A UPAB: 20010620

NOVELTY - An optoelectric conversion element is formed by laying up an electrode layer, a first optoelectric conversion layer, an conductive layer, and a counter electrode layer in that order. The conductive layer consists of an organic polysilane.

USE - The method produces the optoelectric conversion element used for the solar **battery**.

ADVANTAGE - The use of the organic polysilane for the conductive layer exhibits high mechanical strength and eliminates the need for an **electrolytic** solution. The resulting optoelectric conversion element has no liquid leakage, and has long-term stability and high reliability.

Dwg.0/2

TECH JP 2001053355 AUPTX: 20010620

TECHNOLOGY FOCUS - **POLYMERS** - The polysilane consists of formula (1).

R1, R2, R3, R4 = aliphatic hydrocarbon residue which may have substituent, aromatic hydrocarbon residue, or alicyclic hydrocarbon residue;

n, m = integer.

The production of the optoelectric conversion element comprises:

(a) laying up the first optoelectric conversion layer, the conductive layer consisting of the organic polysilane, and the counter electrode layer in that order on the electrode layer;

(b) applying a voltage to the electrode layer and the counter electrode layer;

(c) **aligning** the organic polysilane.

A solar **battery** has the optoelectric conversion element.

FS CPI EPI

FA AB; GI

MC CPI: A06-A00E2; A12-E11B; L03-E05B; L04-E05

EPI: U12-A02A; V01-B01; V01-B01C; X16-D

L47 ANSWER 15 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 2000-610635 [58] WPIX

DNN N2000-452148 DNC C2000-182527

TI Fabricating an amorphous carbon material, comprises mixing a **lignin** material with a salt, and heating the **lignin** and salt mixture comprising sodium sulfate.

DC A85 E19 L03 V01 X15 X16

IN DENTON, F R; SMITH, D R

PA (MOTI) MOTOROLA INC

CYC 1

PI US 6099990 A 20000808 (200058)* 22 H01M004-58 <--

ADT US 6099990 A US 1998-48634 19980326

PRAI US 1998-48634 19980326

IC ICM **H01M004-58**

AB US 6099990 A UPAB: 20001114

NOVELTY - Improved carbon material for electrochemical cells using precursor material having high char yield so as to yield high amorphous material.

DETAILED DESCRIPTION - Fabricating an amorphous carbon material comprises:

(a) mixing a **lignin** material with a salt; and

(b) heating the **lignin** and salt mixture comprising sodium sulfate.

INDEPENDENT CLAIMS are also included for:

(1) the method as above where the salt mixture comprises **polymerizable** ion(s);

(2) mixing a salt with an organic material selected from phenolphthalein, 1-aminoanthraquinone, fluorescein and/or pyromellitic

diimide, and heating the salt and organic material together.

USE - Used for **batteries**, capacitors, **electrolytic** cells, photovoltaic cells, sensors, fuel cells etc., filters, carbon-based media for fillers, adsorbants, and inks.

ADVANTAGE - The improved carbon material are fabricated from relatively inexpensive, readily available and renewable precursor material.

DESCRIPTION OF DRAWING(S) - Figure 1 is a schematic representation of an electrochemical cell including an electrode made of the claimed carbon material.

electrochemical cell 10

anode 20

cathode 30

electrolyte 40

Dwg.1/12

TECH US 6099990 A UPTX: 20001114

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Salt: The salt comprises a cation and anion, the anion selected from (meth)acrylate, vinyl sulfonate, 4-styrenesulfonate, methyl-4-oxybenzoate and/or acetylide.

The cation is selected from N-methyl-4-viylpyridinium, alpha,alpha'-bis-(tetrahydrothiophenio)-xylene and/or allyl trimethylammonium.

The salt preferably comprises sodium acrylate.

Preferred Method: The method comprises adding a **polymerization** initiator (0.001 - 5.0 wt.%) to the **lignin** and salt mixture.

The initiator comprises dialkyl peroxide and/or azobis-isobutyronitrile.

FS CPI EPI

FA AB; GI; DCN

MC CPI: A03-C02; A10-E05B; A12-E01; A12-W12G; E31-N03; L03-E01B3

EPI: V01-B01A; V01-B01C; V01-B01D; V01-B01X; X15-A02A; X16-C; X16-E01C

L47 ANSWER 16 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 2000-516267 [47] WPIX

DNN N2000-381713 DNC C2000-154107

TI **Polymer** secondary **battery** production comprises immersing the cathode, anode and porous film in a liquid **electrolyte**.

DC A14 A85 L03 X16

IN IIJIMA, T; KOBAYASHI, M; MARUYAMA, S; MIYAKOSHI, T

PA (DENK) TDK CORP

CYC 30

PI EP 1032059 A1 20000830 (200047)* EN 15 H01M002-16 <--
R: AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT
RO SE SI

JP 2000311712 A 20001107 (200061) 10 H01M010-40 <--

CN 1265524 A 20000906 (200065) H01M010-38 <--

KR 2000071353 A 20001125 (200131) H01M010-40 <--

JP 3297034 B2 20020702 (200246) 10 H01M010-40 <--

TW 459411 A 20011011 (200247) H01M002-14 <--

JP 2002184468 A 20020628 (200258) 10 H01M010-40 <--

US 6534219 B1 20030318 (200322) H01M002-14 <--

KR 367284 B 20030109 (200338) H01M010-40 <--

US 2003108797 A1 20030612 (200340) H01M002-16 <--

ADT EP 1032059 A1 EP 2000-301336 20000221; JP 2000311712 A JP 2000-36761 20000215; CN 1265524 A CN 2000-102386 20000222; KR 2000071353 A KR 2000-7632 20000217; JP 3297034 B2 JP 2000-36761 20000215; TW 459411 A TW 2000-102975 20000221; JP 2002184468 A Div ex JP 2000-36761 20000215, JP 2001-340741 20000215; US 6534219 B1 US 2000-506688 20000218; KR 367284 B KR 2000-7632 20000217; US 2003108797 A1 Div ex US 2000-506688 20000218, US

2003-347744 20030122
FDT JP 3297034 B2 Previous Publ. JP 2000311712; KR 367284 B Previous Publ. KR 2000071353; US 2003108797 A1 Div ex US 6534219
PRAI JP 1999-43441 19990222
IC ICM H01M002-14; H01M002-16; H01M010-38;
H01M010-40
ICS H01M002-08; H01M004-02; H01M004-62;
H01M010-04
AB EP 1032059 A UPAB: 20000925
NOVELTY - Producing a secondary **battery** comprises **aligning** a cathode and anode with a porous film and fixing parts of the cathode and anode to the porous film, immersing the cathode, anode and porous film in a liquid **electrolyte**, and integrating the electrodes with the porous film by compression.
DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for the secondary **battery** itself.
USE - None given.
ADVANTAGE - A thin and lightweight **polymer** secondary **battery** or other secondary **battery** can be produced at low cost.
DESCRIPTION OF DRAWING(S) - The drawing shows a flow chart showing the production process.
Dwg.1/3
TECH EP 1032059 A1 UPTX: 20000925
TECHNOLOGY FOCUS - **POLYMERS** - The porous film contains a **polymer**, at least part of which is gelled by immersion in the liquid **electrolyte** into a solid **electrolyte**.
FS CPI EPI
FA AB; GI
MC CPI: A12-E06; L03-E03
EPI: X16-B01; X16-F02
L47 ANSWER 17 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN
AN 2000-161200 [14] WPIX
DNN N2000-120224 DNC C2000-050495
TI Lithium secondary **battery** used in e.g. compact disc players, includes electrodes containing hole patterns filled with **polymeric** material which presses the electrodes and separator together .
DC A17 A85 L03 X16
IN HIKMET, R A M
PA (PHIG) KONINK PHILIPS ELECTRONICS NV
CYC 21
PI WO 2000004601 A1 20000127 (200014)* EN 23 H01M010-12 <--
RW: AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
W: JP
EP 1038329 A1 20000927 (200048) EN H01M010-12 <--
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
EP 1038329 B1 20020206 (200211) EN H01M010-12 <--
R: AT BE CH CY DE DK ES FI FR GB GR IE IT LI LU MC NL PT SE
DE 69900860 E 20020321 (200227) H01M010-12 <--
US 6432576 B1 20020813 (200255) H01M002-00 <--
JP 2002520803 W 20020709 (200259) 26 H01M010-40 <--
ES 2172340 T3 20020916 (200270) H01M010-12 <--
ADT WO 2000004601 A1 WO 1999-EP4716 19990702; EP 1038329 A1 EP 1999-932835 19990702, WO 1999-EP4716 19990702; EP 1038329 B1 EP 1999-932835 19990702, WO 1999-EP4716 19990702; DE 69900860 E DE 1999-600860 19990702, EP 1999-932835 19990702, WO 1999-EP4716 19990702; US 6432576 B1 US 1999-352314 19990712; JP 2002520803 W WO 1999-EP4716 19990702, JP 2000-560628 19990702; ES 2172340 T3 EP 1999-932835 19990702
FDT EP 1038329 A1 Based on WO 2000004601; EP 1038329 B1 Based on WO

2000004601; DE 69900860 E Based on EP 1038329, Based on WO 2000004601; JP 2002520803 W Based on WO 2000004601; ES 2172340 T3 Based on EP 1038329

PRAI EP 1998-202387 19980716

IC ICM H01M002-00; H01M010-12; H01M010-40
ICS H01M002-02; H01M002-18; H01M006-12;
H01M010-04

ICA H01M004-70

AB WO 200004601 A UPAB: 20000320

NOVELTY - A lithium secondary **battery** comprises: electrodes having negative and positive electrode materials (2,5) and current collectors (3,6); a separator (7) between the electrodes; and a non-aqueous **electrolyte** solution. The electrode materials are provided with a pattern of holes. The holes are filled with **polymeric** material which sticks and presses the electrodes and the separator together.

DETAILED DESCRIPTION - An INDEPENDENT CLAIM is also included for a method of manufacturing a lithium secondary **battery**. The method includes:

(a) applying negative and positive electrode materials (2, 5) onto negative and positive current collector (3, 6) to form the negative and positive electrodes (1, 4);

(b) arranging a separator (7) between the two electrodes;

(c) making a pattern of holes (8, 9, 10) through the negative and positive electrodes, and in the separator;

(d) **aligning** the pattern of holes in the stack to form overlapping holes;

(e) providing a **polymer** film having a pattern of piles (12) on at least one of its surfaces;

(f) placing the stack on the **polymer** film; and

(g) subjecting the stack and the **polymer** film to heat and pressure to flatten out the projected piles in order to form a laminate structure.

USE - The **battery** is used in lightweight, portable cordless consumer products, e.g. compact disc (CD) players, mobile telephones, laptop computers and video cameras.

ADVANTAGE - The **battery** provides a flexible and thin lithium secondary **battery** which ensures good contact between the electrodes and the **electrolyte**.

DESCRIPTION OF DRAWING(S) - The figure shows a schematic cross-sectional view of a **battery** during manufacture.

Negative electrode 1

Negative electrode material 2

Current collectors 3, 6

Positive electrode 4

Positive electrode material 5

Separator 7

Holes 8, 9, 10

Piles 12

Dwg.1/3

TECH WO 200004601 A1UPTX: 20000320

TECHNOLOGY FOCUS - ELECTRICAL POWER AND ENERGY - Preferred Component: The current collectors and the separator are provided with a pattern of holes which overlaps the holes in the electrode materials. The holes of both patterns are filled with **polymeric** material. The **battery** comprises a multilayer stack of layers of the negative electrode, separator and the positive electrode. The surface of the negative electrode facing away from the separator is provided with a resilient foam layer.

TECHNOLOGY FOCUS - **POLYMERS** - Preferred Material: The

polymeric material is an adhesive, preferably polyethylene.

FS CPI EPI
FA AB; GI
MC CPI: A12-E06; L03-E03
EPI: X16-A01A; X16-B01; X16-B01B; X16-F01; X16-F02

L47 ANSWER 18 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN
AN 1988-309284 [44] WPIX
CR 1988-316449 [45]; 1988-339647 [48]
DNN N1990-058294 DNC C1990-006668
TI Thermoplastic spun conjugate fibre - containing crystalline poly-alpha-olefin
and ethylene copolymer, has excellent retention of acid aqueous
soln, thermal adhesion and dyeability..
DC A32 F01 P73 X16
IN ASAO, S K; OHMAE, T; SAKURAI, T; ASAO, K; OKADA, M
PA (SUMO) SUMITOMO CHEM IND KK; (SUMO) SUMITOMO CHEM CO LTD
CYC 16
PI EP 289330 A 19881102 (198844)* EN 7
R: BE CH DE FR GB IT LI NL
AU 8815313 A 19881103 (198901)
BR 8802095 A 19881129 (198902)
JP 01054041 A 19890301 (198915)
JP 01077882 A 19890323 (198918)
US 4840847 A 19890620 (198931) 5
AU 8816123 A 19890810 (198940)
US 4859710 A 19890822 (198942) 10
BR 8802301 A 19891205 (199003)
JP 01314729 A 19891219 (199005)
CN 1031381 A 19890301 (199008)
US 4957660 A 19900918 (199040)
US 5009951 A 19910423 (199120)
CA 1295797 C 19920218 (199214)
JP 05047643 B 19930719 (199331) 6 D01F008-06
EP 289330 B1 19930901 (199335) EN 9 D01F008-06
R: AT BE CH DE FR GB IT LI NL
DE 3883591 G 19931007 (199341) D01F008-06
JP 2508182 B2 19960619 (199629) 7 C08J007-06
KR 9411588 B1 19941222 (199643) D04H001-42
JP 2545878 B2 19961023 (199647) 8 H01M010-10 <--
ADT EP 289330 A EP 1988-303886 19880428; JP 01054041 A JP 1988-96531 19880418;
JP 01077882 A JP 1987-235452 19870918; US 4840847 A US 1988-189439
19880502; BR 8802301 A BR 1988-2301 19880512; JP 01314729 A JP 1988-96530
19880418; US 4957660 A US 1988-188781 19880429; US 5009951 A US
1989-337602 19890413; JP 05047643 B JP 1988-96530 19880418; EP 289330 B1
EP 1988-303886 19880428; DE 3883591 G DE 1988-3883591 19880428, EP
1988-303886 19880428; JP 2508182 B2 JP 1988-96531 19880418; KR 9411588 B1
KR 1988-5496 19880512; JP 2545878 B2 JP 1987-235452 19870918
FDT JP 05047643 B Based on JP 01314729; DE 3883591 G Based on EP 289330; JP
2508182 B2 Previous Publ. JP 01054041; JP 2545878 B2 Previous Publ. JP
01077882
PRAI JP 1988-96530 19880418; JP 1987-109508 19870430;
JP 1987-160246 19870626; JP 1988-25466 19880204;
JP 1988-96531 19880418; JP 1987-235452 19870918
REP No-SR.Pub; FR 2368554; US 4211819; US 4285748
IC B32B027-02; D01F008-06; D02G003-00; D04H001-42; H01M002-16
ICM C08J007-06; D01F008-06; D04H001-42; H01M010-10
ICS B32B027-02; C08F210-02; C08F220-60; C08L033-24; D01F008-04;
D01F008-10; D02G003-00; D04H001-54; H01B001-20; H01M002-16
AB EP 289330 A UPAB: 19971013
A conjugate fibre is obtd. by melt spinning a mixture of (A) a crystalline

poly-lalpha-olefin (pref. polypropylene) and (B) an ethylene **copolymer** containing 40-95 weight% of an ethylene unit and 5-60 weight% of at least one dialkylaminoalkylacrylamide comonomer unit of formula: $\text{CH}_2\text{-C(R}_1\text{)-CO-NH-C}_n\text{H}_{2n}\text{-N(R}_2\text{)R}_3$ wherein R_1 = hydrogen, methyl; R_2, R_3 = 1-4C alkyl; n = 2-5; and having a melt index of 10-1000 g/10 min. (pref. 30-5000 g/10 min.; measuring according to JIS K-6760); either by **aligning** the components (A) and (B) in parallel or by **aligning** (A) as a core and (B) as a sheath.

A non-woven moulding is obt'd. by a melt spinning process as above, so as to prepare conjugate fibres, and then thermally adhering the resulting conjugate fibres at a temperature no lower than the m.pt. of (B) and no higher than the m.pt. of (A). A lead accumulator **battery** containing separators containing a non-woven fabric as above is also claimed. The dialkylaminoalkylacrylamide derivative is selected from dimethylaminopropylacrylamide, dimethylaminopropylmethacrylamide, dimethylaminoethylacrylamide, dimethylaminoethylmethacrylamide. The weight ratio of (A): (B) is 40:60-60:40.

ADVANTAGE - This fibre is excellent in retention of an acid aqueous solution, dyeability and thermal adhesion. It is promising as a material for functional nonwoven fabrics, filters, and the like that are suited for use as separators of lead accumulators, as well as water purifying cloth, simplified cloths, etc..

Dwg.0/0

FS CPI EPI GMPI

FA AB; GI

MC CPI: A04-D04; A04-G01E; A04-G08; A11-B15B; A12-S05B; A12-S05G; F01-C03;

F01-D05; F01-E01; F02-C02; F02-C02B; F04-E

EPI: X16-B01B; X16-F02

L47 ANSWER 19 OF 19 WPIX COPYRIGHT 2006 THE THOMSON CORP on STN

AN 1975-02836W [02] WPIX

TI Pasted anode plate of lead storage **battery** - activated with fibrous **lignins**.

DC L03 X16

PA (NIST) JAPAN STORAGE BATTERY CO LTD

CYC 1

PI JP 49045891 B 19741206 (197502)*

PRAI JP 1969-32166 19690424

IC H01M035-02

AB JP 74045891 B UPAB: 19930831

Lead storage **battery** consists of an anode of Pb, an **electrolyte** of dilute sulphuric acid and a cathode of PbO₂. The PbO₂ cathode is formed around a metal plate of lead (alloy) leading to a terminal. An additive is added to the anode activator of PbO₂ to prevent it falling from the anode plate and to improve discharge property of the lead storage **battery**. The anode plate comprises a lattice lead plate with a dilute acid and lead cpd. paste. The anode activator contains fibrous **lignins**, part of which may be carbonized to form carbon black to improve the discharge property. **Lignins**, e.g. **thiolignin**, are dissolved in a solvent, e.g. **glycol**, amine or coal tar, to form a spinning solution. The **lignin** fibres are spun from the spinning solution. The **lignin** fibres may be heated at 200-1800 degrees C for 10 mins. -4 hrs. to carbonize the fibres partially. The fibres are dispersed evenly in the activator.

FS CPI EPI

FA AB

MC CPI: L03-E01B

=> file hcaplu

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FILE LAST UPDATED: 2 Feb 2006 (20060202/ED)

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=> d que 134

L2 15 SEA FILE=REGISTRY ABB=ON (107-21-1/BI OR 1314-23-4/BI OR
13463-67-7/BI OR 183868-88-4/BI OR 310899-24-2/BI OR 50926-11-9
/BI OR 7440-31-5/BI OR 7440-36-0/BI OR 7440-74-6/BI OR
7446-14-2/BI OR 7631-86-9/BI OR 7727-43-7/BI OR 9002-89-5/BI
OR 9003-01-4/BI OR 9005-53-2/BI)
L3 4 SEA FILE=REGISTRY ABB=ON L2 AND PMS/CI
L7 774 SEA FILE=REGISTRY ABB=ON LIGNIN
L10 58458 SEA FILE=REGISTRY ABB=ON 79-10-7/CRN
L11 1 SEA FILE=REGISTRY ABB=ON "CONIFERYL ALCOHOL"/CN
L12 1 SEA FILE=REGISTRY ABB=ON SYRINGENIN/CN
L14 34340 SEA FILE=REGISTRY ABB=ON 107-21-1/CRN
L15 905 SEA FILE=REGISTRY ABB=ON L10 AND L14
L17 4251 SEA FILE=REGISTRY ABB=ON 557-75-5/CRN
L18 386 SEA FILE=REGISTRY ABB=ON L10 AND L17
L19 76467 SEA FILE=HCAPLUS ABB=ON L7 OR ?LIGNIN? OR ?LIGNO?
L20 688 SEA FILE=HCAPLUS ABB=ON L19 AND ELECTROLYT?
L21 1603 SEA FILE=HCAPLUS ABB=ON L11 OR L12 OR CONIFERYL ALC? OR
SYRINGENIN?
L22 8 SEA FILE=HCAPLUS ABB=ON L21 AND ELECTROLYT?
L23 136 SEA FILE=HCAPLUS ABB=ON (L20 OR L22) AND ?POLYMER?
L24 15 SEA FILE=HCAPLUS ABB=ON L23 AND BATTER?
L25 23 SEA FILE=HCAPLUS ABB=ON L23 AND ELECTROCHEMICAL/SC
L26 24 SEA FILE=HCAPLUS ABB=ON L24 OR L25
L29 3 SEA FILE=REGISTRY ABB=ON L3 NOT LIGNIN?
L31 31 SEA FILE=HCAPLUS ABB=ON (L20 OR L22) AND (L29 OR L10 OR L14
OR L15 OR L17 OR L18)
L32 10 SEA FILE=HCAPLUS ABB=ON L31 AND ELECTROCHEMICAL/SC, SX
L33 10 SEA FILE=HCAPLUS ABB=ON L31 AND BATTER?
L34 28 SEA FILE=HCAPLUS ABB=ON L26 OR L32 OR L33

=> file compendex

FILE 'COMPENDEX' ENTERED AT 12:06:27 ON 03 FEB 2006
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FILE LAST UPDATED: 30 JAN 2006 <20060130/UP>
FILE COVERS 1970 TO DATE.

<<< SIMULTANEOUS LEFT AND RIGHT TRUNCATION AVAILABLE IN
THE BASIC INDEX >>>

=> d que 148

L40 52716 SEA FILE=WPIX ABB=ON ?LIGNIN? OR ?LIGNO? OR CONFERYL ALC? OR
SYRINGENIN?
L41 1596 SEA FILE=WPIX ABB=ON L40 AND (POLYACRYL OR POLYVINYL? OR
?GLYCOL?)
L42 4776 SEA FILE=WPIX ABB=ON L40 AND ?POLYMER?
L43 110 SEA FILE=WPIX ABB=ON (L41 OR L42) AND ELECTROLYT?
L48 3 SEA FILE=COMPENDEX ABB=ON L43 AND BATTER?

=> file jicst

FILE 'JICST-EPLUS' ENTERED AT 12:06:38 ON 03 FEB 2006
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FILE COVERS 1985 TO 31 JAN 2006 (20060131/ED)

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=> d que 149

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SYRINGENIN?
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?GLYCOL?)
L42 4776 SEA FILE=WPIX ABB=ON L40 AND ?POLYMER?
L43 110 SEA FILE=WPIX ABB=ON (L41 OR L42) AND ELECTROLYT?
L49 2 SEA FILE=JICST-EPLUS ABB=ON L43 AND BATTER?

=> file inspec

FILE 'INSPEC' ENTERED AT 12:06:54 ON 03 FEB 2006
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FILE LAST UPDATED: 30 JAN 2006 <20060130/UP>
FILE COVERS 1969 TO DATE.

<<< SIMULTANEOUS LEFT AND RIGHT TRUNCATION AVAILABLE IN
THE BASIC INDEX >>>

=> d que 150

L40 52716 SEA FILE=WPIX ABB=ON ?LIGNIN? OR ?LIGNO? OR CONFERYL ALC? OR
SYRINGENIN?
L41 1596 SEA FILE=WPIX ABB=ON L40 AND (POLYACRYL OR POLYVINYL? OR
?GLYCOL?)
L42 4776 SEA FILE=WPIX ABB=ON L40 AND ?POLYMER?
L43 110 SEA FILE=WPIX ABB=ON (L41 OR L42) AND ELECTROLYT?
L50 1 SEA FILE=INSPEC ABB=ON L43 AND BATTER?

=> file japio

FILE 'JAPIO' ENTERED AT 12:07:09 ON 03 FEB 2006

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FILE LAST UPDATED: 02 JAN 2006 <20060102/UP>
FILE COVERS APR 1973 TO SEPTEMBER 29, 2005

>>> GRAPHIC IMAGES AVAILABLE <<<

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DEVELOPMENTS AND SEE OUR NEWS SECTION FOR FURTHER INFORMATION
ABOUT THE IPC REFORM <<<

=> d que 151

L40 52716 SEA FILE=WPIX ABB=ON ?LIGNIN? OR ?LIGNO? OR CONFERYL ALC? OR
SYRINGENIN?
L41 1596 SEA FILE=WPIX ABB=ON L40 AND (POLYACRYL OR POLYVINYL? OR
?GLYCOL?)
L42 4776 SEA FILE=WPIX ABB=ON L40 AND ?POLYMER?
L43 110 SEA FILE=WPIX ABB=ON (L41 OR L42) AND ELECTROLYT?
L51 9 SEA FILE=JAPIO ABB=ON L43 AND BATTER?

=> dup rem 134 148 149 150 151

FILE 'HCAPLUS' ENTERED AT 12:07:36 ON 03 FEB 2006
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FILE 'JAPIO' ENTERED AT 12:07:36 ON 03 FEB 2006
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PROCESSING COMPLETED FOR L34

PROCESSING COMPLETED FOR L48

PROCESSING COMPLETED FOR L49

PROCESSING COMPLETED FOR L50

PROCESSING COMPLETED FOR L51

L52 38 DUP REM L34 L48 L49 L50 L51 (5 DUPLICATES REMOVED)

=> d 152 all hitstr 1-38

L52 ANSWER 1 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:394616 HCAPLUS

DN 142:449363

ED Entered STN: 09 May 2005

TI Immobilized enzymes in biocathodes

IN Minteer, Shelley D.; Topcagic, Sabina; Treu, Becky

PA St. Louis University, USA

SO U.S. Pat. Appl. Publ., 38 pp.

CODEN: USXXCO

DT Patent
 LA English
 IC ICM H01M004-86
 ICS H01M008-00
 INCL 429012000; 429013000; 429042000
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy
 Technology)
 Section cross-reference(s): 7

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2005095466	A1	20050505	US 2004-931147	20040831
	WO 2005093888	A2	20051006	WO 2004-US37151	20041104
	W:				
	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,				
	CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,				
	GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,				
	LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,				
	NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,				
	TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
	RW:				
	BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,				
	AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,				
	EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO,				
	SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR,				
	NE, SN, TD, TG				
PRAI	US 2003-517626P	P	20031105		
	US 2004-931147	A	20040831		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2005095466	ICM	H01M004-86
	ICS	H01M008-00
	INCL	429012000; 429013000; 429042000
	IPCI	H01M0004-86 [ICM,7]; H01M0008-00 [ICS,7]
	NCL	429/012.000
	ECLA	H01M004/86B; H01M008/16
WO 2005093888	IPCI	H01M0008-16 [ICM,7]; H01M0004-90 [ICS,7]
	ECLA	H01M004/86B; H01M008/16

OS MARPAT 142:449363

AB Disclosed is an improved biofuel cell having a cathode comprising a dual function membrane, which contains an oxygen oxidoreductase enzyme immobilized within a buffered compartment of the membrane and an electron transport mediator which transfers electrons from an electron-conducting electrode to the redox reaction catalyzed by the oxygen oxidoreductase enzyme. The improved biofuel cell also has an anode that contains an oxidoreductase enzyme that uses an organic fuel, such as alc., as a substrate. An elec. current can flow between the anode and the cathode.

ST fuel cell immobilized enzyme biocathode

IT Carbohydrates, uses

RL: TEM (Technical or engineered material use); USES (Uses)
 (aldoses, fuel; immobilized enzymes in biocathodes)

IT Quaternary ammonium compounds, uses

RL: DEV (Device component use); USES (Uses)
 (alkyltrimethyl; immobilized enzymes in biocathodes)

IT Alcohols, uses

RL: TEM (Technical or engineered material use); USES (Uses)
 (aralkyl, fuel; immobilized enzymes in biocathodes)

IT Fuel cells

(biochem. fuel cells; immobilized enzymes in biocathodes)

IT Nanotubes

(carbon, elec. conductor; immobilized enzymes in biocathodes)

IT Organic compounds, uses
RL: DEV (Device component use); USES (Uses)
(conjugated; immobilized enzymes in biocathodes)

IT Semiconductor materials
(elec. conductor; immobilized enzymes in biocathodes)

IT Carbon black, uses
Carbon fibers, uses
Carbonaceous materials (technological products)
Metals, uses
Oxides (inorganic), uses
RL: MOA (Modifier or additive use); USES (Uses)
(elec. conductor; immobilized enzymes in biocathodes)

IT Catalysts
(electrocatalysts; immobilized enzymes in biocathodes)

IT Carbon fibers, uses
RL: MOA (Modifier or additive use); USES (Uses)
(fabrics, elec. conductor; immobilized enzymes in biocathodes)

IT Polyoxyalkylenes, uses
RL: DEV (Device component use); USES (Uses)
(fluorine- and sulfo-containing, ionomers; immobilized enzymes in biocathodes)

IT Aldehydes, uses
Amino acids, uses
Fatty acids, uses
Flavins
Lipids, uses
Steroids, uses
Sterols
RL: TEM (Technical or engineered material use); USES (Uses)
(fuel; immobilized enzymes in biocathodes)

IT Micelles
(immobilization material; immobilized enzymes in biocathodes)

IT Electric conductors
Fuel cell cathodes
(immobilized enzymes in biocathodes)

IT Peroxides, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)
(immobilized enzymes in biocathodes)

IT Carbohydrates, uses
Coenzymes
Quaternary ammonium compounds, uses
Viologens
RL: DEV (Device component use); USES (Uses)
(immobilized enzymes in biocathodes)

IT **Fluoropolymers**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(immobilized enzymes in biocathodes)

IT Enzymes, uses
RL: DEV (Device component use); USES (Uses)
(immobilized; immobilized enzymes in biocathodes)

IT Alcohols, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(long-chain, fuel; immobilized enzymes in biocathodes)

IT Proteins
RL: DEV (Device component use); USES (Uses)
(metalloproteins; immobilized enzymes in biocathodes)

IT Cations
(organic; immobilized enzymes in biocathodes)

IT Sulfonic acids, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(perfluoro, **copolymer** with PTFE, immobilization material;
immobilized enzymes in biocathodes)

IT Fuel cells
(**polymer electrolyte**, membrane; immobilized enzymes
in biocathodes)

IT **Fluoropolymers**, uses
RL: DEV (Device component use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers; immobilized enzymes in
biocathodes)

IT Ionomers
RL: DEV (Device component use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing; immobilized enzymes in
biocathodes)

IT Proteins
RL: DEV (Device component use); USES (Uses)
(stellacyanins; immobilized enzymes in biocathodes)

IT Perfluoro compounds
RL: TEM (Technical or engineered material use); USES (Uses)
(sulfonic acids, **copolymer** with PTFE, immobilization
material; immobilized enzymes in biocathodes)

IT 9031-72-5, Alcohol dehydrogenase
RL: DEV (Device component use); USES (Uses)
(PQQ-dependent; immobilized enzymes in biocathodes)

IT 9035-73-8, Oxidase
RL: DEV (Device component use); USES (Uses)
(alc.-based; immobilized enzymes in biocathodes)

IT 7782-40-3, Diamond, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(elec. conductor coated with; immobilized enzymes in biocathodes)

IT 50-00-0, Formaldehyde, uses 50-28-2, Estradiol, uses 50-99-7,
D-Glucose, uses 53-57-6, NADPH 56-73-5, Glucose-6-phosphate 56-81-5,
Glycerol, uses 57-60-3, PYruvate, uses 58-22-0, Testosterone
58-68-4, Nadh 64-17-5, Ethanol, uses 67-56-1, Methanol, uses
67-63-0, Isopropanol, uses 71-47-6, Formate, uses 71-50-1, Acetate,
uses 72-89-9, Acetyl co-A 75-07-0, Acetaldehyde, uses 78-83-1,
Isobutanol, uses 79-33-4, uses 85-61-0, Coenzyme A, uses 87-78-5,
Mannitol 96-41-3, Cyclopentanol 104-54-1, Cinnamyl alcohol 107-18-6,
Allyl alcohol, uses 113-21-3, Lactate, uses 116-31-4, Retinal
123-72-8, Butanal 126-44-3, Citrate, uses 149-61-1, Malate 320-77-4
383-86-8, Glycerate **458-35-5, Coniferyl**
alcohol 608-59-3, Gluconate 820-11-1 921-60-8, L-Glucose
1333-74-0, Hydrogen, uses 1643-19-2, Tetrabutylammonium bromide
2002-48-4, Glucuronate 3615-39-2, Sorbose 7664-41-7, Ammonia, uses
10326-41-7, uses 26264-14-2, Propanediol 26566-61-0, Galactose
29354-98-1, Hexadecanol 30237-26-4, Fructose 31103-86-3, Mannose
35296-72-1, Butanol 62309-51-7, Propanol 157663-13-3, L-Gluconic acid
RL: TEM (Technical or engineered material use); USES (Uses)
(fuel; immobilized enzymes in biocathodes)

IT 9002-84-0D, PTFE, **copolymer** with modified perfluorosulfonic acid
RL: TEM (Technical or engineered material use); USES (Uses)
(immobilization material; immobilized enzymes in biocathodes)

IT 7439-89-6, Iron, uses 7440-02-0, Nickel, uses 7440-04-2, Osmium, uses
7440-15-5, Rhenium, uses 7440-16-6, Rhodium, uses 7440-18-8, Ruthenium
, uses 7440-48-4D, Cobalt, complex
RL: CAT (Catalyst use); USES (Uses)
(immobilized enzymes in biocathodes)

IT 7782-44-7, Oxygen, processes
RL: CPS (Chemical process); PEP (Physical, engineering or chemical
process); PROC (Process)

(immobilized enzymes in biocathodes)

IT 603-35-0D, Triphenylphosphine, salts 635-65-4, Bilirubin, uses
 1910-42-5, Methyl viologen 3546-21-2, Ethidium 7773-52-6,
 Hexadecylpyridinium 9001-16-5, Cytochrome c oxidase 9001-37-0, Glucose
 oxidase 9003-99-0, Peroxidase 9055-15-6, Oxidoreductase 12678-01-2D,
 Phenanthroline, metal complex 13096-46-3, Benzyl viologen 13479-49-7
 14708-99-7, Tris(1,10-phenanthroline)iron(2+) 14798-03-9, Ammonium, uses
 15158-62-0, Tris(2,2'-bipyridine)ruthenium(2+) 16749-13-6, Phosphonium
 16969-45-2, Pyridinium 17009-90-4, Imidazolium 22873-66-1,
 Tris(1,10-phenanthroline)ruthenium(2+) 23648-06-8, Tris(2,2'-
 bipyridine)osmium(2+) 37275-48-2D, Bipyridyl, metal complex
 48236-06-2D, Bis(triphenylphosphine)iminium, metal complex 58367-01-4,
 Glucose 66796-30-3, Nafion 117 80498-15-3, Laccase 80619-01-8,
 Bilirubin oxidase 85452-91-1 104420-44-2
 RL: DEV (Device component use); USES (Uses)

(immobilized enzymes in biocathodes)

IT 10182-91-9D, Dodecyltrimethylammonium, halide 10549-76-5D,
 Tetrabutylammonium, halide 23079-35-8D, Triethylhexylammonium, halide
 RL: MOA (Modifier or additive use); USES (Uses)

(immobilized enzymes in biocathodes)

IT 598-35-6, Lactaldehyde 72909-34-3, PQQ 161201-31-6
 RL: TEM (Technical or engineered material use); USES (Uses)

(immobilized enzymes in biocathodes)

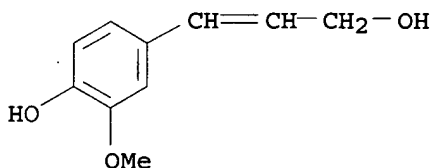
IT 57-88-5, Cholesterol, uses
 RL: DEV (Device component use); USES (Uses)

(oxidase based on; immobilized enzymes in biocathodes)

IT 458-35-5, **Coniferyl alcohol**
 RL: TEM (Technical or engineered material use); USES (Uses)
 (fuel; immobilized enzymes in biocathodes)

RN 458-35-5 HCAPLUS

CN Phenol, 4-(3-hydroxy-1-propenyl)-2-methoxy- (9CI) (CA INDEX NAME)



L52 ANSWER 2 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2005:1334537 HCAPLUS
 DN 144:72245
 ED Entered STN: 23 Dec 2005
 TI Lead acid **battery**
 IN Kozawa, Shiny; Yoshio, Masayuki; Okayasu, Tatsuya
 PA Mase, Shunzo, Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-12
 ICS H01M004-14; H01M004-62; H01M010-08
 CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy
 Technology)

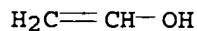
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
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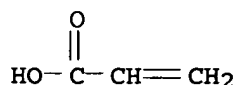
PI JP 2005353559 A2 20051222 JP 2004-202491 20040611
PRAI JP 2004-202491 20040611

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2005353559	ICM	H01M010-12
	ICS	H01M004-14; H01M004-62; H01M010-08
	IPCI	H01M0010-12 [ICM,7]; H01M0004-14 [ICS,7]; H01M0004-62 [ICS,7]; H01M0010-08 [ICS,7]
	FTERM	5H028/AA06; 5H028/EE06; 5H028/HH02; 5H050/AA07; 5H050/BA09; 5H050/CA06; 5H050/CB15; 5H050/DA09; 5H050/EA23; 5H050/HA01
AB	The battery has a container having gaps, for commuting of a dilute H2SO4 based electrolyte or a H2SO4 based electrolyte containing an organic polymer , capable of raising the H overpotential at the anode during overcharging, and is filled with an H overpotential raising organic polymer soluble in the electrolyte .	
ST	lead acid battery hydrogen overpotential raising polymer	
IT	Secondary batteries (lead acid batteries containing electrolyte soluble hydrogen overpotential raising organic polymers)	
IT	7664-93-9, Sulfuric acid, uses RL: DEV (Device component use); USES (Uses) (lead acid batteries containing electrolyte soluble hydrogen overpotential raising organic polymers)	
IT	9002-89-5, Poly(vinyl alcohol) 9003-01-4, Poly(acrylic acid) 9003-01-4D, Poly(acrylic acid), esters 9005-53-2, Lignin , uses RL: MOA (Modifier or additive use); USES (Uses) (lead acid batteries containing electrolyte soluble hydrogen overpotential raising organic polymers)	
IT	9002-89-5, Poly(vinyl alcohol) 9003-01-4, Poly(acrylic acid) 9003-01-4D, Poly(acrylic acid), esters 9005-53-2, Lignin , uses RL: MOA (Modifier or additive use); USES (Uses) (lead acid batteries containing electrolyte soluble hydrogen overpotential raising organic polymers)	
RN	9002-89-5 HCAPLUS	
CN	Ethenol, homopolymer (9CI) (CA INDEX NAME)	
CM	1	
CRN	557-75-5	
CMF	C2 H4 O	



RN 9003-01-4 HCAPLUS
CN 2-Propenoic acid, homopolymer (9CI) (CA INDEX NAME)
CM 1
CRN 79-10-7
CMF C3 H4 O2



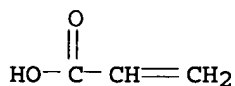
RN 9003-01-4 HCAPLUS

CN 2-Propenoic acid, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7

CMF C3 H4 O2



RN 9005-53-2 HCAPLUS

CN Lignin (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L52 ANSWER 3 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:732148 HCAPLUS

DN 143:176321

ED Entered STN: 12 Aug 2005

TI Flat separators for **polymer electrolyte** fuel cells and their preparation

IN Nogami, Takashi; Shimane, Nobuhiro; Hasebe, Hiroshi; Sakuta, Toshihide

PA Shin-Etsu Polymer Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 10 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M008-02

ICS H01M008-10

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005216679	A2	20050811	JP 2004-22022	20040129
PRAI	JP 2004-22022		20040129		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2005216679	ICM	H01M008-02
	ICS	H01M008-10
	IPCI	H01M008-02 [ICM,7]; H01M008-10 [ICS,7]
	FTERM	5H026/AA06; 5H026/BB00; 5H026/BB01; 5H026/BB02; 5H026/BB06; 5H026/BB08; 5H026/CC03; 5H026/EE06; 5H026/EE18

AB The flat separators having convexes and concaves on ≥ 1 planes are made of mixts. of **polymers** and multiple elec. conductive fillers, wherein at least a part of the conductive fillers are aligned in a direction intersecting the planar direction. The separators are prepared by a process comprising steps of (1) compressive molding or extruding the

mixts. into primary sheets with **aligning** the conductive fillers in a direction intersecting the compression direction or in the extrusion direction, resp., (2) laminating the primary sheets to give blocks, (3) cutting the blocks into secondary sheets in a direction intersecting the alignment direction of the conductive fillers, and (4) forming the uneven pattern on the secondary sheet surfaces. The separators show improved elec. conductivity in the thickness direction than ordinarily prepared one.

ST **polymer electrolyte** fuel cell separator conductive filler alignment

IT Fuel cell separators
(preparation of flat separators containing **polymer** and conductive fillers for **polymer electrolyte** fuel cells)

IT Phenolic resins, uses
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(preparation of flat separators containing **polymer** and conductive fillers for **polymer electrolyte** fuel cells)

IT 7782-42-5, Graphite, uses 9003-35-4, Formaldehyde-phenol **copolymer**
RL: PEP (Physical, engineering or chemical process); PYP (Physical process); TEM (Technical or engineered material use); PROC (Process); USES (Uses)
(separator component; preparation of flat separators containing **polymer** and conductive fillers for **polymer electrolyte** fuel cells)

L52 ANSWER 4 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:672235 HCAPLUS

DN 143:136389

ED Entered STN: 29 Jul 2005

TI Manufacture of membrane-electrode assemblies (MEA) for fuel cells, and same fuel cells

IN Nakanishi, Harumichi; Kobayashi, Nobuyuki; Sekisawa, Yoshifumi; Takami, Masanobu; Inazumi, Kon; Fujita, Daisuke; Shiozaki, Hideki; Saira, Tomonori

PA Toyota Motor Corp., Japan

SO Jpn. Kokai Tokkyo Koho, 24 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M008-02

ICS H01M004-86; H01M004-88; H01M004-90; H01M004-92; H01M004-96;

H01M008-10

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005203332	A2	20050728	JP 2004-134393	20040428
PRAI	JP 2003-421240	A	20031218		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2005203332	ICM	H01M008-02
	ICS	H01M004-86; H01M004-88; H01M004-90; H01M004-92; H01M004-96; H01M008-10
	IPCI	H01M0008-02 [ICM,7]; H01M0004-86 [ICS,7]; H01M0004-88 [ICS,7]; H01M0004-90 [ICS,7]; H01M0004-92 [ICS,7]; H01M0004-96 [ICS,7]; H01M0008-10 [ICS,7]
	FTERM	5H018/AA06; 5H018/BB01; 5H018/BB03; 5H018/BB05;

5H018/BB07; 5H018/BB08; 5H018/BB13; 5H018/BB16;
5H018/BB17; 5H018/DD05; 5H018/DD06; 5H018/EE03;
5H018/EE05; 5H018/EE10; 5H018/EE12; 5H018/EE13;
5H018/EE18; 5H018/EE19; 5H018/HH01; 5H018/HH03;
5H018/HH04; 5H026/AA06; 5H026/BB03; 5H026/BB04;
5H026/BB10; 5H026/CX07; 5H026/EE02; 5H026/EE05;
5H026/EE08; 5H026/EE11; 5H026/EE19; 5H026/HH01;
5H026/HH03; 5H026/HH04

- AB The MEA is constituted by a **polymer electrolyte** membrane, and electrode-catalyst-carrying carbon nanotubes aligned on the membrane. A proton-conductive substance (e.g., perfluorosulfonic acids) and a water-repellent material (e.g., **fluoropolymer**) may be formed on the carbon nanotubes. The carbon nanotubes may be covered with an oxygen-rich thermal insulator (ceramics). The MEA is manufactured by a process comprising steps of (1) alloying an electrode catalyst to load on carbon nanotubes, (2) transferring the carbon nanotubes on a **polymer electrolyte** membrane, and (3) allowing one end of the carbon nanotubes to join with the **electrolyte** membrane with **aligning** the carbon nanotubes. The other end of the carbon nanotubes may be bonded with a separator via an elec. conductive adhesive. The MEA achieves high power generation efficiency without fastening.
- ST fuel cell membrane electrode assembly carbon nanotube
- IT Nanotubes
(carbon; manufacture of membrane-electrode assemblies (MEA) containing carbon nanotubes for fuel cells)
- IT Fuel cells
(manufacture of membrane-electrode assemblies (MEA) containing carbon nanotubes for fuel cells)
- IT **Fluoropolymers**, uses
RL: DEV (Device component use); USES (Uses)
(manufacture of membrane-electrode assemblies (MEA) containing carbon nanotubes for fuel cells)
- IT 677301-04-1, JEF 120
RL: NUU (Other use, unclassified); USES (Uses)
(elec. conductive adhesive, for bonding carbon nanotubes with separators; manufacture of membrane-electrode assemblies (MEA) containing carbon nanotubes for fuel cells)
- IT 7440-06-4P, Platinum, uses
RL: DEV (Device component use); IMF (Industrial manufacture); PREP (Preparation); USES (Uses)
(electrode catalyst; manufacture of membrane-electrode assemblies (MEA) containing carbon nanotubes for fuel cells)
- IT 7440-44-0P, Carbon, uses
RL: DEV (Device component use); IMF (Industrial manufacture); PEP (Physical, engineering or chemical process); PYP (Physical process); PREP (Preparation); PROC (Process); USES (Uses)
(nanotubes; manufacture of membrane-electrode assemblies (MEA) containing carbon nanotubes for fuel cells)
- IT 1306-38-3, Cerium oxide (CeO₂), uses
RL: DEV (Device component use); USES (Uses)
(oxygen-rich ceramics, thermal insulators on carbon nanotubes; manufacture of membrane-electrode assemblies (MEA) containing carbon nanotubes for fuel cells)
- IT 24937-79-9, Polyvinylidene fluoride 63496-24-2, Nafion EW 1100
RL: DEV (Device component use); USES (Uses)
(proton conductor coatings on carbon nanotubes; manufacture of membrane-electrode assemblies (MEA) containing carbon nanotubes for fuel cells)
- IT 50851-57-5P, Styrenesulfonic acid **homopolymer**
RL: DEV (Device component use); IMF (Industrial manufacture); PREP

(Preparation); USES (Uses)

(water-repellent coatings on carbon nanotubes; manufacture of membrane-electrode assemblies (MEA) containing carbon nanotubes for fuel cells)

L52 ANSWER 5 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:611329 HCAPLUS

DN 143:100456

ED Entered STN: 15 Jul 2005

TI **Polymer electrolyte** fuel cells, membrane-electrode assemblies (MEA) for same fuel cells, and preparation of MEA

IN Abe, Mitsutaka

PA Nissan Motor Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 9 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

IC ICM H01M008-02

ICS H01M008-10

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005190750	A2	20050714	JP 2003-428616	20031225
PRAI	JP 2003-428616		20031225		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2005190750	ICM	H01M008-02
	ICS	H01M008-10
	IPCI	H01M0008-02 [ICM,7]; H01M0008-10 [ICS,7]
	FTERM	5H026/AA06; 5H026/BB00; 5H026/BB03; 5H026/CX05; 5H026/HH02

AB The MEA comprises a proton-conductive solid **polymer** film, a pair of electrode catalyst layers sandwiching the **polymer** film, and a pair of gas-diffusing layers sandwiching the electrode catalyst layers, wherein the electrode catalyst layer is formed within a porous substance framework whose periphery is positioned at outside of the periphery of the gas-diffusing layer. Also claimed is a process for preparation of the MEA, capable of easily **aligning** the electrode catalyst layer. The preparation process comprises steps of (1) placing a porous substance on the **polymer** film, (2) impregnating the porous substance with a solution containing the electrode catalyst, the proton-conductive **polymer**, and a solvent, and then removing the solvent to form the electrode catalyst layer. Alternatively, the electrode catalyst layer is formed on the gas-diffusing layer. Alternatively, a substrate sheet is employed in forming the electrode catalyst layer, and then the substrate sheet is removed. The process is easy-to-align the electrode catalyst layer, and the porous substance work as a reinforcement and prevents the **polymer** film from damage caused by the gas-diffusing layer.

ST **polymer electrolyte** fuel cell membrane electrode assembly reinforcement

IT Carbon black, uses

RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)

(electrode catalyst support; **polymer electrolyte**

fuel cell with membrane-electrode assembly reinforced with porous substance)

IT **Fluoropolymers**, uses

RL: NUU (Other use, unclassified); REM (Removal or disposal); PROC (Process); USES (Uses)
 (polymer electrolyte fuel cell with membrane-electrode assembly reinforced with porous substance)

IT Fuel cells
 (polymer electrolyte; polymer electrolyte fuel cell with membrane-electrode assembly reinforced with porous substance)

IT Polyimides, uses
 RL: DEV (Device component use); USES (Uses)
 (porous reinforcement for electrode catalyst layer; polymer electrolyte fuel cell with membrane-electrode assembly reinforced with porous substance)

IT Porous materials
 (reinforcement for electrode catalyst layer; polymer electrolyte fuel cell with membrane-electrode assembly reinforced with porous substance)

IT 7440-06-4, Platinum, uses
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (electrode catalyst; polymer electrolyte fuel cell with membrane-electrode assembly reinforced with porous substance)

IT 163294-14-2, Nafion 112
 RL: DEV (Device component use); PEP (Physical, engineering or chemical process); PYP (Physical process); PROC (Process); USES (Uses)
 (proton-conductive solid polymer film; polymer electrolyte fuel cell with membrane-electrode assembly reinforced with porous substance)

IT 9002-84-0, PTFE
 RL: NUU (Other use, unclassified); REM (Removal or disposal); PROC (Process); USES (Uses)
 (substrate for forming reinforced electrode catalyst layer; polymer electrolyte fuel cell with membrane-electrode assembly reinforced with porous substance)

L52 ANSWER 6 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2005:370797 HCAPLUS
 DN 142:433082
 ED Entered STN: 29 Apr 2005
 TI Method for charging secondary lead-acid battery
 IN Ozawa, Akiya; Manohn, Creo; Wada, Mamoru; Mase, Shunzo
 PA Japan
 SO Jpn. Kokai Tokkyo Koho, 6 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-44
 ICS H01M010-08
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2005116493	A2	20050428	JP 2003-383150	20031008
PRAI	JP 2003-383150		20031008		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2005116493	ICM	H01M010-44
	ICS	H01M010-08

IPCI H01M0010-44 [ICM,7]; H01M0010-08 [ICS,7]
PTERM 5H028/EE06; 5H028/FF01; 5H028/HH10; 5H030/AA00;
5H030/BB06

AB The method is carried out by applying a pulsed current onto a secondary lead-acid **battery**, having an **electrolyte** solution which contains polyacrylic acid, polyacrylate, polyvinyl alc., and/or fine-grain **lignin**.

ST charge method secondary lead acid **battery** pulsed current application; **battery electrolyte** soln org **polymer** additive

IT **Battery electrolytes**
(charge methods of secondary lead-acid **batteries** containing pulsed current applications and having organic **polymer** additives in **electrolyte** solns.)

IT Secondary **batteries**
(lead-acid; charge methods of secondary lead-acid **batteries** containing pulsed current applications and having organic **polymer** additives in **electrolyte** solns.)

IT 9002-89-5, Polyvinyl alcohol
RL: MOA (Modifier or additive use); USES (Uses)
(charge methods of secondary lead-acid **batteries** containing pulsed current applications and having organic **polymer** additives in **electrolyte** solns.)

IT 9002-89-5, Polyvinyl alcohol
RL: MOA (Modifier or additive use); USES (Uses)
(charge methods of secondary lead-acid **batteries** containing pulsed current applications and having organic **polymer** additives in **electrolyte** solns.)

RN 9002-89-5 HCAPLUS

CN Ethenol, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 557-75-5

CMF C2 H4 O

H₂C=CH-OH

L52 ANSWER 7 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2005:188316 HCAPLUS

ED Entered STN: 04 Mar 2005

TI Ionic conduction in thin films of **polymer electrolytes**

AU Truong, Nguyen H.; Teeters, Dale

CS Department of Chemistry and Biochemistry, The University of Tulsa, Tulsa, OK, 74104, USA

SO Abstracts of Papers, 229th ACS National Meeting, San Diego, CA, United States, March 13-17, 2005 (2005), CHED-1188 Publisher: American Chemical Society, Washington, D. C.
CODEN: 69GQMP

DT Conference; Meeting Abstract

LA English

AB The major obstacle for the use of **polymer electrolytes** in **batteries** is the low ionic conduction of these materials. One way to attack this problem is the confinement of **polymer electrolytes**, such as poly(ethylene oxide), PEO, in nanochannels or nanopores that are ordered parallel to the direction of ion conduction. Confinement enhances ion conduction either by **aligning** the

polymer chains or crystallites of the **polymer** and/or by enhancing conduction at the interface of the channel. This work is concerned with PEO-lithium triflate **electrolytes** confined in micro and nanoporous, com. available filtration membranes. We have attempted to grow thin coatings or cylinders of **polymer** on the channel surfaces. The structure of the **polymer** in the channels was determined by SEM and ionic conduction has been studied by a.c. impedance techniques. Studying conduction of these structures will help to determine the importance of interfacial ionic conduction in enhanced conduction processes.

L52 ANSWER 8 OF 38 COMPENDEX COPYRIGHT 2006 EEI on STN
AN 2005(37):7411 COMPENDEX
TI A novel flow **battery** - A lead acid **battery** based on an **electrolyte** with soluble lead(II): IV. The influence of additives.
AU Hazza, Ahmed (School of Chemistry The University, Southampton SO171BJ, United Kingdom); Pletcher, Derek; Wills, Richard
SO Journal of Power Sources v 149 n SUPPL. Sep 26 2005 2005.p 103-111
CODEN: JPSODZ ISSN: 0378-7753
PY 2005
DT Journal
TC Experimental
LA English
AB During development of an undivided flow **battery** based on the Pb(II)/Pb and PbO₂/Pb(II) couples in aqueous methanesulfonic acid, it was noted that **battery** performance might be improved by additives that (i) decrease the roughness of the lead deposit at the negative electrode and (ii) enhance the kinetics of the Pb(II)/PbO₂ couple at the positive electrode. This paper reports the study of sodium **ligninsulfonate** and polyethylene **glycol** as potential levelling agents for lead and of three inorganic ions as possible catalysts for the Pb(II)/PbO₂ couple. The addition of 1 g dm⁻³ **ligninsulfonate** leads to uniform deposits without the tendency to form dendrites but leads to a slight decrease in both charge and energy efficiency for the **battery**. Only nickel(II) reduced the overpotential for PbO₂ deposition but again it has an adverse influence on the energy efficiency. \$CPY 2005 Elsevier B.V. All rights reserved. 17 Refs.
CC 702.1.1 Primary Batteries; 804.2 Inorganic Compounds; 803 Chemical Agents and Basic Industrial Chemicals; 704.1 Electric Components; 525.2 Energy Conservation
CT *Lithium **batteries**; **Electrolytes**; Additives; Catalysts; Energy efficiency; Electrodes; Lead compounds
ST Flow **batteries**; Lead acid; Methanesulfonic acid
ET Pb; O*Pb; O sy 2; sy 2; Pb sy 2; PbO₂/Pb; Pb cp; cp; O cp; PbO

L52 ANSWER 9 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:964668 HCAPLUS
DN 141:398259
ED Entered STN: 12 Nov 2004
TI Direct methanol fuel cell electrode catalyst
IN Fan, Qinhai
PA USA
SO U.S. Pat. Appl. Publ., 11 pp.
CODEN: USXXCO
DT Patent
LA English
IC ICM H01M004-86
ICS H01M004-94; B05D005-12; H01M004-88
INCL 429044000; 429042000; 502101000; 427115000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38, 67

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004224218	A1	20041111	US 2003-642852	20030818
PRAI	US 2003-468324P	P	20030506		

CLASS

	PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
	US 2004224218	ICM	H01M004-86
		ICS	H01M004-94; B05D005-12; H01M004-88
		INCL	429044000; 429042000; 502101000; 427115000
		IPCI	H01M0004-86 [ICM,7]; H01M0004-94 [ICS,7]; B05D0005-12 [ICS,7]; H01M0004-88 [ICS,7]
		NCL	429/044.000
AB	The invention concerns a method and device for reducing or substantially eliminating methanol crossover from the anode to the cathode of a direct methanol fuel cell and for increasing catalyst efficiency in which a catalyst ink layer comprising an electron conductive and proton conductive binder material is applied either to the anode electrode or the electrolyte layer of the direct methanol fuel cell.		
ST	methanol fuel cell electrode catalyst		
IT	Sulfonic acids, uses		
	RL: DEV (Device component use); USES (Uses)		
	(direct methanol fuel cell electrode catalyst)		
IT	Catalysts		
	(electrocatalysts; direct methanol fuel cell electrode catalyst)		
IT	Polyoxyalkylenes, uses		
	RL: MOA (Modifier or additive use); USES (Uses)		
	(fluorine- and sulfo-containing, ionomers; direct methanol fuel cell electrode catalyst)		
IT	Polymers, uses		
	RL: DEV (Device component use); USES (Uses)		
	(graft; direct methanol fuel cell electrode catalyst)		
IT	Fluoropolymers, uses		
	RL: MOA (Modifier or additive use); USES (Uses)		
	(polyoxyalkylene-, sulfo-containing, ionomers; direct methanol fuel cell electrode catalyst)		
IT	Ionomers		
	RL: MOA (Modifier or additive use); USES (Uses)		
	(polyoxyalkylenes, fluorine- and sulfo-containing; direct methanol fuel cell electrode catalyst)		
IT	Fuel cells		
	(proton exchange membrane; direct methanol fuel cell electrode catalyst)		
IT	Sulfonic acids, uses		
	RL: DEV (Device component use); USES (Uses)		
	(salts; direct methanol fuel cell electrode catalyst)		
IT	12714-36-2, Platinum 50, ruthenium 50 atomic		
	RL: CAT (Catalyst use); USES (Uses)		
	(direct methanol fuel cell electrode catalyst)		
IT	62-53-3, Aniline, processes 109-97-7, Pyrrole 275-51-4, Azulene		
	RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)		
	(direct methanol fuel cell electrode catalyst)		
IT	7664-38-2D, Phosphoric acid, derivative 7664-93-9D, Sulfuric acid, derivative		
	13598-36-2, Phosphonic acid 13598-36-2D, Phosphonic acid, salt		
	25233-30-1, Polyaniline 30604-81-0, Polypyrrole 82451-56-7,		

Polyazulene 679809-71-3
RL: DEV (Device component use); USES (Uses)
(direct methanol fuel cell electrode catalyst)
IT 67-56-1, Methanol, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(direct methanol fuel cell electrode catalyst)
IT 104-15-4, p-Toluenesulfonic acid, uses 8062-15-5,
Lignosulfonic acid
RL: MOA (Modifier or additive use); USES (Uses)
(proton conductive material; direct methanol fuel cell electrode
catalyst)
IT 679809-71-3
RL: DEV (Device component use); USES (Uses)
(direct methanol fuel cell electrode catalyst)
RN 679809-71-3 HCAPLUS
CN Lignin, polymer with benzenamine, graft (9CI) (CA INDEX NAME)

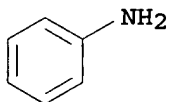
CM 1

CRN 9005-53-2
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 62-53-3
CMF C6 H7 N



IT 8062-15-5, Lignosulfonic acid
RL: MOA (Modifier or additive use); USES (Uses)
(proton conductive material; direct methanol fuel cell electrode
catalyst)
RN 8062-15-5 HCAPLUS
CN Lignosulfonic acid (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L52 ANSWER 10 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:331639 HCAPLUS
DN 140:342205
ED Entered STN: 23 Apr 2004
TI Apparatus and method of manufacture of electrochemical cell components
IN Baars, Dirk M.; Borges, Hillary P.; Chen, Sueng B.
PA USA
SO U.S. Pat. Appl. Publ., 20 pp., Cont.-in-part of U.S. Ser. No. 53,346.
CODEN: USXXCO
DT Patent
LA English
IC ICM H01M008-04
ICS H01M002-08
INCL 429026000; 429036000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38, 47, 72

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004076863	A1	20040422	US 2003-638117	20030807
	US 2002155333	A1	20021024	US 2002-53346	20020118
PRAI	US 2001-262991P	P	20010119		
	US 2001-263010P	P	20010119		
	US 2002-53346	A2	20020118		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2004076863	ICM	H01M008-04
	ICS	H01M002-08
	INCL	429026000; 429036000
	IPCI	H01M0008-04 [ICM,7]; H01M0002-08 [ICS,7]
	NCL	429/026.000
	ECLA	C25B009/04; H01M008/02B2; H01M008/02C; H01M008/02C2K2
US 2002155333	IPCI	H01M0008-04 [ICM,7]; H01M0008-02 [ICS,7]; H01M0002-08 [ICS,7]
	NCL	429/026.000
	ECLA	C25B009/04; H01M008/02B2; H01M008/02C; H01M008/02C2K2

AB A component for an electrochem. cell comprises a thermally and elec. conductive core, wherein the conductive core comprises apertures, and wherein the conductive core further comprises an active area substantially covered by an elec. and thermally conductive **polymeric** composite. The conductive **polymeric** composite is adhered to the core by an adhesion promoter comprising elec. conductive particles to reduce the volume resistivity of the component, and an optional adhesive composition. Components may be manufactured having a volume resistivity of about 0.500 Ω -cm or less and a thermal conductivity of at least about 5 W/m ° K. In addition, the component is economical to produce due to inexpensive starting materials as well as the use of conventional processing equipment.

ST electrochem cell component fabrication app; fuel cell component fabrication app; electrolyzer cell component fabrication app

IT Glass spheres

RL: MOA (Modifier or additive use); USES (Uses)

(Ag-coated; apparatus and method of manufacture of electrochem. cell components)

IT Conducting **polymers**

(adhesion promoter; apparatus and method of manufacture of electrochem. cell components)

IT Epoxy resins, uses

RL: MOA (Modifier or additive use); USES (Uses)

(adhesion promoter; apparatus and method of manufacture of electrochem. cell components)

IT Composites

Electric resistance

Electrochemical cells

Electrolytic cells

Fuel cells

Thermal conductivity

(apparatus and method of manufacture of electrochem. cell components)

IT Alloys, uses

Intermetallic compounds

Metals, uses

Phenolic resins, uses

Polyacetylenes, uses

Polyanilines
RL: MOA (Modifier or additive use); USES (Uses)
(apparatus and method of manufacture of electrochem. cell components)

IT Butadiene rubber, uses
RL: MOA (Modifier or additive use); USES (Uses)
(of 1,2-configuration, adhesion promoter; apparatus and method of manufacture of electrochem. cell components)

IT Polyimides, uses
RL: MOA (Modifier or additive use); USES (Uses)
(polyamide-, adhesion promoter; apparatus and method of manufacture of electrochem. cell components)

IT Polyamides, uses
RL: MOA (Modifier or additive use); USES (Uses)
(polyimide-, adhesion promoter; apparatus and method of manufacture of electrochem. cell components)

IT Adhesion, physical
(promoter; apparatus and method of manufacture of electrochem. cell components)

IT 80-43-3, Perkadox BC 128-37-0, Ionol, uses 3290-92-4, Sartomer SR-350
7291-09-0, Vinylsilane 7440-21-3D, Silicon, compound 7440-32-6D,
Titanium, compound 7440-47-3D, Chromium, compound 7440-67-7D, Zirconium,
compound 7782-42-5, Graphite, uses 7803-62-5D, Silane,
mercapto-functional 13598-78-2, Aminosilane 679809-71-3
RL: MOA (Modifier or additive use); USES (Uses)
(adhesion promoter; apparatus and method of manufacture of electrochem. cell components)

IT 4420-74-0, A-189 7429-90-5, Aluminum, uses
RL: DEV (Device component use); USES (Uses)
(apparatus and method of manufacture of electrochem. cell components)

IT 77-99-6, Trimethylolpropane 90-72-2, Ancamine K54 131-17-9, Diallyl
phthalate 614-45-9 1592-23-0, Calcium stearate 7440-02-0, Nickel,
uses 7440-22-4, Silver, uses 7440-44-0, Carbon, uses 9003-35-4
25053-15-0, Poly(diallyl phthalate) 25067-58-7, Polyacetylene
25233-30-1, Polyaniline 25233-34-5, Polythiophene 26009-24-5,
Poly-p-phenylenevinylene 30604-81-0, Polypyrrole 31566-31-1, Glycerol
monostearate 99241-45-9, Epiclon N-770 101225-65-4, 2-Butenoic acid,
2,3-dimethyl-, ion(1-) 133174-08-0, Sumiepoxy ESCN 195XL 25
RL: MOA (Modifier or additive use); USES (Uses)
(apparatus and method of manufacture of electrochem. cell components)

IT 9003-17-2
RL: MOA (Modifier or additive use); USES (Uses)
(butadiene rubber, of 1,2-configuration, adhesion promoter; apparatus and
method of manufacture of electrochem. cell components)

IT 679809-71-3
RL: MOA (Modifier or additive use); USES (Uses)
(adhesion promoter; apparatus and method of manufacture of electrochem. cell
components)

RN 679809-71-3 HCAPLUS
CN Lignin, polymer with benzenamine, graft (9CI) (CA INDEX NAME)

CM 1

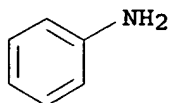
CRN 9005-53-2
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 62-53-3

CMF C6 H7 N



L52 ANSWER 11 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2004:142664 HCAPLUS
DN 140:149238
ED Entered STN: 22 Feb 2004
TI Lead-acid battery having an organic polymer additive
IN Kozawa, Akiya; Hrada, Hirofumi; Yokoi, Giyun
PA Japan
SO U.S. Pat. Appl. Publ., 10 pp., Cont.-in-part of U.S. Ser. No. 439,258.
CODEN: USXXCO

DT Patent
LA English

IC ICM H01M010-08
ICS H01M010-44

INCL 429347000; 429204000; 429205000; 429050000

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

Section cross-reference(s): 38

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 2004033422	A1	20040219	US 2003-634592	20030805
	JP 2002323862	A2	20021108	JP 2002-14177	20020516
	US 2003228525	A1	20031211	US 2003-439258	20030515
	JP 2004356076	A2	20041216	JP 2003-185790	20030526
	JP 2004356077	A2	20041216	JP 2003-185791	20030526
	WO 2004105161	A2	20041202	WO 2004-IB1727	20040526
	WO 2004105161	A3	20050616		

W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH,
CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD,
GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC,
LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI,
NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY,
TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW
RW: BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW, AM,
AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK,
EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE,
SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE,
SN, TD, TG

PRAI JP 2002-14177 A 20020516
US 2003-439258 A2 20030515
JP 2003-185790 A 20030526
JP 2003-185791 A 20030526
JP 2001-15418 A 20010124
US 2003-634592 A 20030805

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 2004033422	ICM	H01M010-08
	ICS	H01M010-44
	INCL	429347000; 429204000; 429205000; 429050000

IPCI H01M0010-08 [ICM,7]; H01M0010-44 [ICS,7]
NCL 429/347.000
JP 2002323862 IPCI G09F0009-00 [ICM,7]; B32B0007-02 [ICS,7]; C08J0007-04
[ICS,7]; C08J0007-06 [ICS,7]; C23C0014-06 [ICS,7];
C23C0014-08 [ICS,7]; C08L0101-00 [ICS,7]
US 2003228525 IPCI H01M0010-08 [ICM,7]; H01M0010-44 [ICS,7]
NCL 429/347.000
JP 2004356076 IPCI H01M0010-42 [ICM,7]; H01M0010-08 [ICS,7]
FTERM 5H028/AA06; 5H028/BB02; 5H028/BB03; 5H028/BB06;
5H028/BB10; 5H028/FF01; 5H028/HH02; 5H028/HH10;
5H030/AS20; 5H030/BB00; 5H030/BB18
JP 2004356077 IPCI H01M0010-54 [ICM,7]; C25C0001-22 [ICS,7]
FTERM 4K058/AA21; 4K058/BA30; 4K058/BB04; 4K058/CA04;
4K058/CA20; 4K058/EB13; 4K058/ED03; 4K058/ED04;
4K058/FC07; 4K058/FC21; 5H031/AA01; 5H031/BB09;
5H031/RR02; 5H031/RR07
WO 2004105161 IPCI H01M0002-16 [ICM,7]
AB The invention concerns a process for prolonging the life of a lead-acid
battery by adding an organic polymer and ultra fine
lignin to its electrolyte and then discharging the
battery at a high current rate and the battery so
produced.
ST lead acid battery org polymer additive
IT Battery electrolytes
(lead-acid battery having organic polymer additive)
IT Polysiloxanes, uses
RL: MOA (Modifier or additive use); USES (Uses)
(lead-acid battery having organic polymer additive)
IT Secondary batteries
(lead-acid; lead-acid battery having organic polymer
additive)
IT 7440-36-0, Antimony, miscellaneous
RL: MSC (Miscellaneous)
(impurity; lead-acid battery having organic polymer
additive)
IT 107-21-1, Ethylene glycol, uses 7440-31-5, Tin, uses 7440-74-6,
Indium, uses 7446-14-2, Lead sulfate 7727-43-7, Barium sulfate
9002-89-5, Polyvinyl alcohol 9003-01-4, Polyacrylic acid
9005-53-2, Lignin, uses
RL: MOA (Modifier or additive use); USES (Uses)
(lead-acid battery having organic polymer additive)
IT 9002-89-5, Polyvinyl alcohol 9003-01-4, Polyacrylic acid
9005-53-2, Lignin, uses
RL: MOA (Modifier or additive use); USES (Uses)
(lead-acid battery having organic polymer additive)
RN 9002-89-5 HCAPLUS
CN Ethenol, homopolymer (9CI) (CA INDEX NAME)

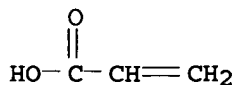
CM 1

CRN 557-75-5
CMF C2 H4 O

H₂C=CH-OH

RN 9003-01-4 HCAPLUS
CN 2-Propenoic acid, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2RN 9005-53-2 HCAPLUS
CN Lignin (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L52 ANSWER 12 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:634143 HCAPLUS
DN 139:166974
ED Entered STN: 15 Aug 2003
TI **Polymer electrolyte** membrane fuel cell system
including contaminant removal method
IN George, Paul E.; Saunders, James H.; Vijayendran, Bhima
PA Battelle Memorial Institute, USA
SO PCT Int. Appl., 69 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01M008-04
ICS H01M008-10
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy
Technology)
Section cross-reference(s): 38

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003067695	A2	20030814	WO 2003-US3864	20030206
	WO 2003067695	A3	20031127		
	W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW			
	RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG			
	AU 2003210939	A1	20030902	AU 2003-210939	20030206
	US 2005069735	A1	20050331	US 2004-913293	20040806
PRAI	US 2002-354770P	P	20020206		
	WO 2003-US3864	W	20030206		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2003067695	ICM	H01M008-04
	ICS	H01M008-10
	IPCI	H01M0008-04 [ICM,7]; H01M0008-10 [ICS,7]
AU 2003210939	IPCI	H01M0008-04 [ICM,7]; H01M0008-10 [ICS,7]
US 2005069735	IPCI	H01M0008-00 [ICM,7]; H01M0008-10 [ICS,7]

NCL 429/013.000

- AB The invention relates to a fuel cell system comprising: a fuel processor for producing hydrogen from a fuel; and a fuel cell stack including a plurality of **polymer electrolyte** membranes and a plurality of electrodes; where the **polymer electrolyte** membrane comprises a proton conducting hydrocarbon-based **polymer** membrane, the **polymer** having a backbone and having acidic groups on side chains attached to the backbone. The invention also relates to methods of removing contaminants from the fuel cell electrode.
- ST **polymer electrolyte** membrane fuel cell system
contaminant removal method
- IT Reforming apparatus
(fuel; **polymer electrolyte** membrane fuel cell
system including contaminant removal method)
- IT Oligomers
RL: TEM (Technical or engineered material use); USES (Uses)
(hydrocarbon-based; **polymer electrolyte** membrane
fuel cell system including contaminant removal method)
- IT Polyketones
Polysulfones, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, sulfonated; **polymer electrolyte**
membrane fuel cell system including contaminant removal method)
- IT Polyethers, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyketone-, sulfonated; **polymer electrolyte**
membrane fuel cell system including contaminant removal method)
- IT Algorithm
Fuel cell **electrolytes**
(**polymer electrolyte** membrane fuel cell system
including contaminant removal method)
- IT **Polymer** blends
RL: DEV (Device component use); SPN (Synthetic preparation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polymer electrolyte** membrane fuel cell system
including contaminant removal method)
- IT Hydrocarbons, uses
RL: SPN (Synthetic preparation); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(**polymers**; **polymer electrolyte** membrane
fuel cell system including contaminant removal method)
- IT Polyethers, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-, sulfonated; **polymer electrolyte**
membrane fuel cell system including contaminant removal method)
- IT Fuel gas manufacturing
(reforming; **polymer electrolyte** membrane fuel cell
system including contaminant removal method)
- IT Fuel cells
(solid **electrolyte**; **polymer electrolyte**
membrane fuel cell system including contaminant removal method)
- IT Polyoxyalkylenes, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(sulfonated; **polymer electrolyte** membrane fuel cell
system including contaminant removal method)
- IT 630-08-0, Carbon monoxide, miscellaneous

RL: MSC (Miscellaneous)
(impurity; **polymer electrolyte** membrane fuel cell
system including contaminant removal method)

IT 8062-15-5DP, **Lignosulfonate**, sulfonated 25322-69-4DP,
Polypropylene oxide, sulfonated
RL: DEV (Device component use); SPN (Synthetic preparation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polymer electrolyte** membrane fuel cell system
including contaminant removal method)

IT 127-19-5, Dimethyl acetamide 288-32-4, Imidazole, uses 872-50-4,
n-Methylpyrrolidone, uses 10294-54-9, Cesium sulfate 12067-99-1,
Phosphotungstic acid
RL: MOA (Modifier or additive use); USES (Uses)
(**polymer electrolyte** membrane fuel cell system
including contaminant removal method)

IT 1333-74-0P, Hydrogen, uses
RL: SPN (Synthetic preparation); TEM (Technical or engineered material
use); PREP (Preparation); USES (Uses)
(**polymer electrolyte** membrane fuel cell system
including contaminant removal method)

IT 8062-15-5DP, **Lignosulfonate**, sulfonated
RL: DEV (Device component use); SPN (Synthetic preparation); TEM
(Technical or engineered material use); PREP (Preparation); USES (Uses)
(**polymer electrolyte** membrane fuel cell system
including contaminant removal method)

RN 8062-15-5 HCAPLUS
CN Lignosulfonic acid (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L52 ANSWER 13 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:634139 HCAPLUS
DN 139:166971
ED Entered STN: 15 Aug 2003
TI **Polymer electrolyte** membranes for use in fuel cells
IN Vijayendran, Bhima; McGinniss, Vincent D.; Risser, Steven M.; Schulte,
Michael D.; Sayre, Jay R.; Cafmeyer, Jeffrey T.
PA Battelle Memorial Institute, USA
SO PCT Int. Appl., 40 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01M008-02
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy
Technology)
Section cross-reference(s): 38

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2003067691	A2	20030814	WO 2003-US3862	20030206
	WO 2003067691	A3	20031016		
W:	AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW				
RW:	GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, SE, SI, SK, TR, BF,				

BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
 CA 2475501 AA 20030814 CA 2003-2475501 20030206
 AU 2003209080 A1 20030902 AU 2003-209080 20030206
 EP 1474839 A2 20041110 EP 2003-707808 20030206
 R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT,
 IE, SI, LT, LV, FI, RO, MK, CY, AL, TR, BG, CZ, EE, HU, SK
 JP 2005531646 T2 20051020 JP 2003-566925 20030206
 US 2005069745 A1 20050331 US 2004-912590 20040805
 PRAI US 2002-354717P P 20020206
 WO 2003-US3862 W 20030206

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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WO 2003067691	ICM	H01M008-02
	IPCI	H01M0008-02 [ICM,7]
	ECLA	B01D069/14B; B01D071/46; B01D071/52; B01D071/68; B01D071/82; H01M008/10E2
CA 2475501	IPCI	H01M0008-02 [ICM,7]
	ECLA	B01D069/14B; B01D071/46; B01D071/52; B01D071/68; B01D071/82; H01M008/10E2
AU 2003209080	IPCI	H01M0008-02 [ICM,7]
EP 1474839	IPCI	H01M0008-02 [ICM,7]
	ECLA	B01D069/14B; B01D071/46; B01D071/52; B01D071/68; B01D071/82; H01M008/10E2
JP 2005531646	IPCI	C08J0005-22 [ICM,7]; H01B0001-06 [ICS,7]; H01B0013-00 [ICS,7]; H01M0008-02 [ICS,7]; H01M0008-10 [ICS,7]; C08L0101-00 [ICS,7]
	FTERM	4F071/AA04; 4F071/AA51; 4F071/AA61; 4F071/AA64; 4F071/AA86; 4F071/AF36; 4F071/AH15; 4F071/BC01; 4F071/FA05; 4F071/FB01; 4F071/FC02; 4F071/FD03; 4F071/FD04; 5G301/CA30; 5G301/CD01; 5G301/CE01; 5H026/AA08; 5H026/BB00; 5H026/BB08; 5H026/EE18
US 2005069745	IPCI	H01M0008-10 [ICM,7]; C08J0005-22 [ICS,7]
	NCL	429/033.000

AB This invention relates to a **polymer electrolyte** membrane comprising a proton conducting hydrocarbon-based **polymer** membrane, the **polymer** having a backbone and having acidic groups on side chains attached to the backbone. The invention also relates to a **polymer electrolyte** membrane comprising a proton conducting hydrocarbon-based **polymer** membrane having a phase separated morphol. microstructure. The invention also relates to a **polymer electrolyte** membrane comprising a proton conducting membrane, the membrane comprising a basic material in combination with an acidic material selected from acidic hydrocarbon-based **polymers**, acidic hydrocarbon-based oligomers, and blends thereof.

ST **polymer electrolyte** membrane fuel cell use

IT **Polymers**, uses

RL: TEM (Technical or engineered material use); USES (Uses)
 (aromatic, sulfonated; **polymer electrolyte** membranes
 for use in fuel cells)

IT Epoxy resins, uses

RL: TEM (Technical or engineered material use); USES (Uses)
 (aromatic; **polymer electrolyte** membranes for use in
 fuel cells)

IT Fuel cells

(direct methanol; **polymer electrolyte** membranes for
 use in fuel cells)

IT Polyoxyalkylenes, uses

RL: TEM (Technical or engineered material use); USES (Uses)
 (fluorine- and sulfo-containing, ionomers; **polymer**

- electrolyte membranes for use in fuel cells)
- IT Oligomers
RL: TEM (Technical or engineered material use); USES (Uses)
(hydrocarbon-based; **polymer electrolyte** membranes for use in fuel cells)
- IT **Polymers**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(inorg., sulfonated; **polymer electrolyte** membranes for use in fuel cells)
- IT Cyclosiloxanes
RL: TEM (Technical or engineered material use); USES (Uses)
(pentaglycidyl ethers, Siloxirane; **polymer electrolyte** membranes for use in fuel cells)
- IT Polysulfones, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polyether-, sulfonated; **polymer electrolyte** membranes for use in fuel cells)
- IT Polyketones
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polyether-, sulfonated; **polymer electrolyte** membranes for use in fuel cells)
- IT Polyethers, uses
RL: DEV (Device component use); TEM (Technical or engineered material use); USES (Uses)
(polyketone-, sulfonated; **polymer electrolyte** membranes for use in fuel cells)
- IT Fuel cell **electrolytes**
Glass transition temperature
Ionic conductivity
(**polymer electrolyte** membranes for use in fuel cells)
- IT **Polymer** blends
RL: TEM (Technical or engineered material use); USES (Uses)
(**polymer electrolyte** membranes for use in fuel cells)
- IT Alicyclic compounds
RL: TEM (Technical or engineered material use); USES (Uses)
(**polymers**. sulfonated; **polymer electrolyte** membranes for use in fuel cells)
- IT Hydrocarbons, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**polymers**; **polymer electrolyte** membranes for use in fuel cells)
- IT **Fluoropolymers**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylene-, sulfo-containing, ionomers; **polymer electrolyte** membranes for use in fuel cells)
- IT Ionomers
RL: TEM (Technical or engineered material use); USES (Uses)
(polyoxyalkylenes, fluorine- and sulfo-containing; **polymer electrolyte** membranes for use in fuel cells)
- IT Polyethers, uses
RL: DEV (Device component use); SPN (Synthetic preparation); TEM (Technical or engineered material use); PREP (Preparation); USES (Uses)
(polysulfone-, sulfonated; **polymer electrolyte** membranes for use in fuel cells)
- IT Fuel cells
(solid **electrolyte**; **polymer electrolyte**

membranes for use in fuel cells)

IT **Polymers, uses**
RL: TEM (Technical or engineered material use); USES (Uses)
(sulfonated, organic hybrid; **polymer electrolyte**
membranes for use in fuel cells)

IT **Polyoxyphenylenes**
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(sulfonated; **polymer electrolyte** membranes for use
in fuel cells)

IT 127-19-5, Dimethyl acetamide 872-50-4, n-Methylpyrrolidone, uses
10294-54-9, Cesium sulfate 12067-99-1, Phosphotungstic acid
RL: MOA (Modifier or additive use); USES (Uses)
(**polymer electrolyte** membranes for use in fuel
cells)

IT 67-56-1, Methanol, uses 288-32-4, Imidazole, uses 288-32-4D,
Imidazole, substituted 584-08-7, Potassium carbonate 7447-41-8,
Lithium chloride (LiCl), uses 7647-14-5, Sodium chloride, uses
7778-80-5, Potassium sulfate, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(**polymer electrolyte** membranes for use in fuel
cells)

IT **8062-15-5, Lignosulfonate**
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(resins, sulfonated; **polymer electrolyte** membranes
for use in fuel cells)

IT **8062-15-5, Lignosulfonate**
RL: DEV (Device component use); TEM (Technical or engineered material
use); USES (Uses)
(resins, sulfonated; **polymer electrolyte** membranes
for use in fuel cells)

RN 8062-15-5 HCAPLUS
CN Lignosulfonic acid (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L52 ANSWER 14 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2003:398337 HCAPLUS
DN 138:404288
ED Entered STN: 25 May 2003
TI Lead storage **battery** and indium additive therefor for prevention
of capacity decline
IN Ikeda, Shoichiro; Kozawa, Akiya; Yoshio, Masaki
PA Tagawa, Kazuo, Japan; Kozawa, Akiya
SO Jpn. Kokai Tokkyo Koho, 4 pp.
CODEN: JKXXAF
DT Patent
LA Japanese
IC ICM H01M010-08
ICS H01M004-62
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy
Technology)
FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
JP 2003151618	A2	20030523	JP 2001-382340	20011109
PRAI JP 2001-382340		20011109		

CLASS
PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

JP 2003151618 ICM H01M010-08
ICS H01M004-62
IPCI H01M0010-08 [ICM,7]; H01M0004-62 [ICS,7]
AB The Pb storage **battery** contains In 1-1,000 ppm in the
electrolyte and/or the electrodes. The additive further include
PVA 0.01-5, PEG 0.01-2, PMA 0.01-0.5 and/or **lignin** 0.01-2%.
ST lead storage **battery** indium additive
IT Secondary **batteries**
(Lead storage **battery** and indium additive therefor for
prevention of capacity decline)
IT Polyoxyalkylenes, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(Lead storage **battery** and indium additive therefor for
prevention of capacity decline)
IT 13464-82-9, Indium sulfate
RL: MOA (Modifier or additive use); USES (Uses)
(Lead storage **battery** and indium additive therefor for
prevention of capacity decline)
IT 9002-89-5, PVA 9005-53-2, **Lignin**, uses
25322-68-3, PEG 78565-16-9, PMA
RL: TEM (Technical or engineered material use); USES (Uses)
(Lead storage **battery** and indium additive therefor for
prevention of capacity decline)
IT 9002-89-5, PVA 9005-53-2, **Lignin**, uses
RL: TEM (Technical or engineered material use); USES (Uses)
(Lead storage **battery** and indium additive therefor for
prevention of capacity decline)
RN 9002-89-5 HCAPLUS
CN Ethenol, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 557-75-5
CMF C2 H4 O

H₂C=CH-OH

RN 9005-53-2 HCAPLUS
CN Lignin (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L52 ANSWER 15 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 1
AN 2003:799369 HCAPLUS
DN 140:131003
ED Entered STN: 13 Oct 2003
TI Beneficial action of complex organic **polymer** additions for the
regeneration of deteriorated lead acid **batteries**
AU Sugawara, M.; Tachibana, K.; Kozawa, A.; Yamashita, M.; Ikeda, S.; Brodd,
R. J.
CS Faculty of Engineering, Yamagata University, Japan
SO ITE Letters on Batteries, New Technologies & Medicine (2003), 4(4),
424-431
CODEN: ILBMF9; ISSN: 1531-2046
PB ITE-Hohwa Inc.
DT Journal
LA English

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38

AB Complex organic **polymers** with, or without, carbon additives were found to be very effective in reactivating deteriorated lead acid **batteries**. The beneficial effects of the **polymers**, reported in this paper, were confirmed by measuring the electrochem. effects sep. on both the anode and cathode in car **batteries** and in expts. with pure lead electrodes. The beneficial effects of the additives are found to reside on the anode and not the cathode. In the presence of the additive, the lead sulfate, PbSO₄, crystals formed on the anode were found to be finer and more active.

ST **polymer additive electrolyte lead acid battery**
regeneration

IT **Battery electrolytes**
Passivation
(beneficial action of complex organic **polymer** addns. for regeneration of deteriorated lead acid **batteries**)

IT Acrylic **polymers**, uses
Polymers, uses
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(**electrolyte** additives; beneficial action of complex organic **polymer** addns. for regeneration of deteriorated lead acid **batteries**)

IT Secondary **batteries**
(lead-acid; beneficial action of complex organic **polymer** addns. for regeneration of deteriorated lead acid **batteries**)

IT Vinyl compounds, uses
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(**polymers**, **electrolyte** additives; beneficial action of complex organic **polymer** addns. for regeneration of deteriorated lead acid **batteries**)

IT 7446-14-2, Lead sulfate
RL: CPS (Chemical process); FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(beneficial action of complex organic **polymer** addns. for regeneration of deteriorated lead acid **batteries**)

IT 132036-01-2, Sulfuric acid, antimony salt
RL: CPS (Chemical process); NUU (Other use, unclassified); PEP (Physical, engineering or chemical process); PROC (Process); USES (Uses)
(beneficial action of complex organic **polymer** addns. for regeneration of deteriorated lead acid **batteries**)

IT 8068-05-1, Lignin, alkali 9002-89-5, Polyvinyl alcohol 10031-62-6, Tin sulfate 13464-82-9, Indium sulfate
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(**electrolyte** additives; beneficial action of complex organic **polymer** addns. for regeneration of deteriorated lead acid **batteries**)

IT 7440-44-0, Carbon, uses
RL: NUU (Other use, unclassified); TEM (Technical or engineered material use); USES (Uses)
(ultrafine powders, **electrolyte** additives; beneficial action of complex organic **polymer** addns. for regeneration of deteriorated lead acid **batteries**)

RE.CNT 5 THERE ARE 5 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

(1) Kozawa, A; US 5958623 1999 HCAPLUS
(2) Kozawa, A; Japanese Patent Pending
(3) Kozawa, A; Kagaku Kogyo 2002, V53, P872 HCAPLUS
(4) Mori, Y; ITE Letters, in press V4(4)
(5) Nishina, T; ITE Letters, in press V4(4) HCAPLUS
IT 8068-05-1, Lignin, alkali 9002-89-5, Polyvinyl
alcohol
RL: NUU (Other use, unclassified); TEM (Technical or engineered material
use); USES (Uses)
(electrolyte additives; beneficial action of complex organic
polymer addns. for regeneration of deteriorated lead acid
batteries)
RN 8068-05-1 HCAPLUS
CN Lignin, alkali (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
RN 9002-89-5 HCAPLUS
CN Ethenol, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 557-75-5
CMF C2 H4 O

H₂C=CH-OH

L52 ANSWER 16 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 2002:676348 HCAPLUS
DN 137:203989
ED Entered STN: 08 Sep 2002
TI Method for producing membrane electrode assembly for use in fuel cell
power generation using oxygen and hydrogen
IN Hong, Byung-Sun; Kim, Ho-Suk; Shin, Mi-Nam
PA Fuelcellpower Co., Ltd., S. Korea
SO PCT Int. Appl., 83 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01M
CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)
Section cross-reference(s): 38, 72
FAN.CNT 1
PATENT NO. KIND DATE APPLICATION NO. DATE

PI WO 2002069413 A2 20020906 WO 2002-KR284 20020222
W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH,
GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KZ, LC, LK, LR, LS,
LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL,
PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA,
UG, US, UZ, VN, YU, ZA, ZM, ZW
RW: GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW, AT, BE, CH,
CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR,
BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG
KR 2002069338 A 20020830 KR 2001-50734 20010822
US 2003114297 A1 20030619 US 2002-221720 20020912

	US 2005238800	A1	20051027	US 2005-170850	20050630
PRAI	KR 2001-9533	A	20010224		
	KR 2001-50734	A	20010822		
	WO 2002-KR284	W	20020222		
	US 2002-221720	A3	20020912		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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WO 2002069413	ICM	H01M
	IPCI	H01M [ICM,7]
KR 2002069338	IPCI	H01M0008-02 [ICM,7]
US 2003114297	IPCI	B01J0031-00 [ICM,7]
	NCL	502/159.000
US 2005238800	IPCI	H01M0008-10 [ICM,7]
	NCL	427/115.000
	ECLA	H01M008/10B; H01M008/10B2

AB The present invention relates to a membrane electrode assembly (MEA) which significantly enhances power d. as well as structural reliability and method for producing the same. More specially, it relates to the membrane electrode assembly which has a plurality of protuberances and method for producing the same. The present invention involves making supporting bodies to have a plurality of protuberances on one side of the supporting bodies, forming a catalyst layer on one side of the supporting bodies having the protuberances, interposing a **polymer-electrolyte**-membrane between the supporting bodies, **aligning** the supporting bodies for the protuberances to engaged each other; and hot-pressing the aligned supporting bodies. The present invention can increase area of three-phase boundary in which oxidation-reduction reaction of hydrogen and oxygen occurs and decrease resistance to ion conduction; consequently fuel cells have the characteristic of a large output of power d.

ST fuel cell membrane electrode assembly

IT Catalysts

(electrocatalysts; method for producing membrane electrode assembly for use in fuel cell power generation using oxygen and hydrogen)

IT Power

(generation; method for producing membrane electrode assembly for use in fuel cell power generation using oxygen and hydrogen)

IT Fuel cells

Membranes, nonbiological

Polymer electrolytes

Spraying

(method for producing membrane electrode assembly for use in fuel cell power generation using oxygen and hydrogen)

IT 7782-44-7, Oxygen, processes

RL: CPS (Chemical process); PEP (Physical, engineering or chemical process); PROC (Process)

(method for producing membrane electrode assembly for use in fuel cell power generation using oxygen and hydrogen)

IT 1333-74-0, Hydrogen, uses

RL: TEM (Technical or engineered material use); USES (Uses)

(method for producing membrane electrode assembly for use in fuel cell power generation using oxygen and hydrogen)

L52 ANSWER 17 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2001:816310 HCAPLUS

DN 135:360204

ED Entered STN: 09 Nov 2001

TI Lead acid **battery** and its additive

IN Ikeda, Shoichiro; Yamashita, Masamichi; Ozawa, Akiya

PA Mase, Shunzo, Japan; Tagawa, Kazuo
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-08
 ICS H01M004-14; H01M004-62
 CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001313064	A2	20011109	JP 2000-169775	20000428
PRAI	JP 2000-169775		20000428		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2001313064	ICM	H01M010-08
	ICS	H01M004-14; H01M004-62
	IPCI	H01M0010-08 [ICM,7]; H01M0004-14 [ICS,7]; H01M0004-62 [ICS,7]

AB The **battery** contains poly(acrylic acid) or its esters, and optionally poly(vinyl alc.) in its **electrolyte** solution and/or anode active mass mixture The additive includes poly(acrylic acid) or its esters, and may also contain poly(vinyl alc.), soluble **lignin**, SnSO₄, Sn(SO₄)₂, and/or colloidal PbSO₄.

ST lead **battery electrolyte** anode additive polyacrylic acid; polyacrylate ester lead **battery** additive

IT Secondary **batteries**

(lead-acid; poly(acrylic acid) and polyacrylate ester based additives in **electrolytes** and anodes for lead acid **batteries**)

IT 7446-14-2, Lead sulfate

RL: MOA (Modifier or additive use); USES (Uses)

(colloidal; poly(acrylic acid) and polyacrylate ester based additives in **electrolytes** and anodes for lead acid **batteries**)

IT 7488-55-3, Stannous sulfate 9002-89-5, Poly(vinyl alcohol)

9003-01-4, Poly(acrylic acid) 9003-01-4D, Poly(acrylic acid), esters 9005-53-2, **Lignin**, uses 19307-28-9, Stannic sulfate

RL: MOA (Modifier or additive use); USES (Uses)

(poly(acrylic acid) and polyacrylate ester based additives in **electrolytes** and anodes for lead acid **batteries**)

IT 9002-89-5, Poly(vinyl alcohol) 9003-01-4, Poly(acrylic acid) 9003-01-4D, Poly(acrylic acid), esters 9005-53-2

, **Lignin**, uses

RL: MOA (Modifier or additive use); USES (Uses)

(poly(acrylic acid) and polyacrylate ester based additives in **electrolytes** and anodes for lead acid **batteries**)

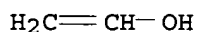
RN 9002-89-5 HCAPLUS

CN Ethenol, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 557-75-5

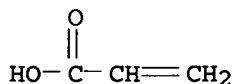
CMF C2 H4 O



RN 9003-01-4 HCAPLUS
 CN 2-Propenoic acid, homopolymer (9CI) (CA INDEX NAME)

CM 1

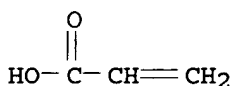
CRN 79-10-7
 CMF C3 H4 O2



RN 9003-01-4 HCAPLUS
 CN 2-Propenoic acid, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
 CMF C3 H4 O2



RN 9005-53-2 HCAPLUS
 CN Lignin (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L52 ANSWER 18 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 2001:796615 HCAPLUS
 DN 135:346875
 ED Entered STN: 02 Nov 2001
 TI Sealed lead acid **batteries**
 IN Nakayama, Takuo; Yoshimura, Tsunesuke; Sasaki, Takehiro
 PA Matsushita Electric Industrial Co., Ltd., Japan
 SO Jpn. Kokai Tokkyo Koho, 4 pp.
 CODEN: JKXXAF
 DT Patent
 LA Japanese
 IC ICM H01M010-06
 ICS H01M002-02; H01M004-62
 CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy
 Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 2001307761	A2	20011102	JP 2000-117475	20000419
PRAI	JP 2000-117475		20000419		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
JP 2001307761	ICM	H01M010-06
	ICS	H01M002-02; H01M004-62
	IPCI	H01M0010-06 [ICM,7]; H01M0002-02 [ICS,7]; H01M0004-62 [ICS,7]

AB The **batteries** have a **polymer** case, an electrode-separator stack in the case, and an **electrolyte** retained in the stack; where the anode active mass contains 2.1-5.0% BaSO₄, and the **battery** case is (modified) poly(phenylene ether). The anode active mass may also contain 0.15-0.7% Na **lignosulfonate**

ST sealed lead **battery** anode barium sulfonate; sodium **lignosulfonate** lead **battery** anode; polyphenylene ether sealed lead **battery** case

IT **Battery** anodes
(anodes containing barium sulfate and sodium **lignosulfonate** for sealed lead acid **batteries** with (modified) poly(phenylene ether) cases)

IT Secondary **batteries**
(lead-acid; anodes containing barium sulfate and sodium **lignosulfonate** for sealed lead acid **batteries** with (modified) poly(phenylene ether) cases)

IT 7439-92-1, Lead, uses 9041-80-9, Poly(phenylene ether) 25805-30-5
RL: DEV (Device component use); USES (Uses)
(anodes containing barium sulfate and sodium **lignosulfonate** for sealed lead acid **batteries** with (modified) poly(phenylene ether) cases)

IT 7727-43-7, Barium sulfate 8061-51-6, Sodium **lignosulfonate**
RL: MOA (Modifier or additive use); USES (Uses)
(anodes containing barium sulfate and sodium **lignosulfonate** for sealed lead acid **batteries** with (modified) poly(phenylene ether) cases)

IT 8061-51-6, Sodium **lignosulfonate**
RL: MOA (Modifier or additive use); USES (Uses)
(anodes containing barium sulfate and sodium **lignosulfonate** for sealed lead acid **batteries** with (modified) poly(phenylene ether) cases)

RN 8061-51-6 HCAPLUS

CN Lignosulfonic acid, sodium salt (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L52 ANSWER 19 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2002:912261 HCAPLUS

DN 139:71463

ED Entered STN: 02 Dec 2002

TI Thermal stability studies of Li-ion cell negative electrode materials: graphite, MCMB, hard-carbon and InSb

AU Maleki, Hossein; Howard, Jason N.

CS Motorola Inc./Energy Systems Group, Lawrenceville, GA, 30043-6913, USA

SO Carbon'01, An International Conference on Carbon, Lexington, KY, United States, July 14-19, 2001 (2001), 1244-1249 Publisher: University of Kentucky Center for Applied Energy Research Library, Lexington, Ky. CODEN: 69DHNI; ISBN: 0-9674971-2-4

DT Conference; (computer optical disk)

LA English

CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)

AB Anodes for Li-ion **batteries** are typically made by casting a mixture of carbon with poly(vinylidene difluoride) (PVDF) onto copper current collectors. Differential scanning calorimetry anal. showed that the total exothermic heat generation of lithiated synthetic graphite, mesocarbon microbeads (MCMB), **lignin**-based hard carbon, or mixts. of these materials increased with increasing lithiation. This heat

generation was attributed to the reaction of PVDF with LixC6. Differences in the thermal stability of these anode materials were observed. InSb material exhibited exothermic reaction even as raw material or as freshly coated electrodes. The heat generation of this material increased with increasing lithiation, cycling, or addition of **electrolyte**.

Partial or complete substitution of PVDF with a phenol-formaldehyde binder reduced the heat generation from the PVDF reaction with LixC6.

ST graphite anode thermal stability; mesocarbon microbead anode thermal stability; carbon hard anode thermal stability; indium antimonide anode thermal stability; anode thermal stability lithium ion **battery**;
polyvinylidene difluoride carbon anode lithium ion **battery**

IT **Fluoropolymers**, uses

RL: DEV (Device component use); USES (Uses)

(thermal stability study of anode materials of graphite, mesocarbon microbeads, hard carbon, and indium antimonide containing poly(vinylidene difluoride) binder for lithium-ion **batteries**)

IT **Battery** anodes

(thermal stability study of anode materials of graphite, mesocarbon microbeads, hard carbon, and indium antimonide for lithium-ion **batteries**)

IT 24937-79-9, Poly(vinylidene difluoride)

RL: DEV (Device component use); USES (Uses)

(thermal stability study of anode materials of graphite, mesocarbon microbeads, hard carbon, and indium antimonide containing poly(vinylidene difluoride) binder for lithium-ion **batteries**)

IT 1312-41-0, Indium antimonide 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(thermal stability study of anode materials of graphite, mesocarbon microbeads, hard carbon, and indium antimonide for lithium-ion **batteries**)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Du Pasquier, A; J Electrochem Soc 1998, V145, P472
- (2) Gray, F; Solid Polymer Electrolytes-Fundamental and Technological Applications 1991
- (3) Kanamura, K; J Electroanal Chem 1995, V394, P49 HCAPLUS
- (4) Maleki, H; J Electrochem Soc 1998, V145, P721 HCAPLUS
- (5) Maleki, H; J Electrochem Soc 2000, V174, P4470
- (6) Menachem, C; Electrochemical Soc and International Soc of Electrochemistry Meeting Abstract 1997, V97-2
- (7) Richard, M; J Electrochem Soc 1999, V146, P2069
- (8) Vanghey, T; Electrochem and Solid-State Letter 2000, V3(1), P13

L52 ANSWER 20 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2000:68665 HCAPLUS

DN 132:80997

ED Entered STN: 28 Jan 2000

TI Fabrication of lithium secondary **battery**

IN Hikmet, Rifat A. M.

PA Koninklijke Philips Electronics N.V., Neth.

SO PCT Int. Appl., 23 pp.

CODEN: PIXXD2

DT Patent

LA English

IC ICM H01M010-12

ICS H01M002-18; H01M006-12; H01M010-04; H01M002-02

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

Section cross-reference(s): 38

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	WO 2000004601	A1	20000127	WO 1999-EP4716	19990702
	W: JP				
	RW: AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE				
	EP 1038329	A1	20000927	EP 1999-932835	19990702
	EP 1038329	B1	20020206		
	R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI				
	AT 213098	E	20020215	AT 1999-932835	19990702
	JP 2002520803	T2	20020709	JP 2000-560628	19990702
	ES 2172340	T3	20020916	ES 1999-932835	19990702
	US 6432576	B1	20020813	US 1999-352314	19990712
	HK 1032853	A1	20021025	HK 2001-102100	20010323
PRAI	EP 1998-202387	A	19980716		
	WO 1999-EP4716	W	19990702		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
WO 2000004601	ICM	H01M010-12
	ICS	H01M002-18; H01M006-12; H01M010-04; H01M002-02
	IPCI	H01M0010-12 [ICM,7]; H01M0002-18 [ICS,7]; H01M0006-12 [ICS,7]; H01M0010-04 [ICS,7]; H01M0002-02 [ICS,7]
	ECLA	H01M002/02B4; H01M010/04F
EP 1038329	IPCI	H01M0010-12 [ICM,6]; H01M0002-18 [ICS,6]; H01M0006-12 [ICS,6]; H01M0010-04 [ICS,6]; H01M0002-02 [ICS,6]
AT 213098	IPCI	H01M0010-12 [ICM,7]; H01M0002-18 [ICS,7]; H01M0006-12 [ICS,7]; H01M0010-04 [ICS,7]; H01M0002-02 [ICS,7]
JP 2002520803	IPCI	H01M0010-40 [ICM,7]; H01M0002-18 [ICS,7]; H01M0004-70 [ICS,7]
ES 2172340	IPCI	H01M0010-12 [ICM,7]; H01M0002-18 [ICS,7]; H01M0006-12 [ICS,7]; H01M0010-04 [ICS,7]; H01M0002-02 [ICS,7]
US 6432576	IPCI	H01M0002-00 [ICM,7]; H01M0002-18 [ICS,7]
	NCL	429/162.000; 429/127.000; 429/237.000
	ECLA	H01M002/02B4; H01M010/04F
HK 1032853	IPCI	H01M [ICM,7]

AB According to one of the methods of fabrication of a thin flexible lithium-ion **battery**, an anode, a separator, and a cathode are provided with a pattern of macroscopic holes. After **aligning** the holes, the stack of the electrodes and the separator is placed on a structured **polymer** film having piles in the same pattern as the holes. After applying heat and pressure, the ends of the piles are flattened, and form a kind of rivets by which the electrodes and the separator are bonded together. This bonding ensures a good contact between the electrodes and an **electrolyte** in the separator.

ST lithium secondary **battery** fabrication

IT Carbon black, uses

RL: MOA (Modifier or additive use); USES (Uses)
(fabrication of lithium secondary **battery**)

IT **Fluoropolymers**, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(fabrication of lithium secondary **battery**)

IT Styrene-butadiene rubber, uses

RL: TEM (Technical or engineered material use); USES (Uses)
(fabrication of lithium secondary **battery**)

IT Secondary **batteries**

(lithium; fabrication of lithium secondary **battery**)

IT Adhesives

(polymer; fabrication of lithium secondary battery)
IT 96-49-1, Ethylene carbonate 623-53-0, Ethyl methylcarbonate 7782-42-5,
Graphite, uses 9002-88-4, Polyethylene 12190-79-3, Cobalt lithium
oxide colio2 21324-40-3, Lithium hexafluorophosphate
RL: DEV (Device component use); USES (Uses)
(fabrication of lithium secondary battery)
IT 9002-84-0, Ptfе 9004-32-4, Carboxymethyl cellulose
RL: TEM (Technical or engineered material use); USES (Uses)
(fabrication of lithium secondary battery)
IT 7429-90-5, Aluminum, uses 7440-50-8, Copper, uses
RL: DEV (Device component use); USES (Uses)
(grid; fabrication of lithium secondary battery)
IT 9003-55-8
RL: TEM (Technical or engineered material use); USES (Uses)
(styrene-butadiene rubber, fabrication of lithium secondary
battery)

RE.CNT 7 THERE ARE 7 CITED REFERENCES AVAILABLE FOR THIS RECORD

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(2) Courtecuisse, J; FR 917676 A 1947
(3) Francis, M; US 5518836 A 1996 HCAPLUS
(4) Julio, A; US 4996128 A 1991 HCAPLUS
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L52 ANSWER 21 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 2

AN 2000:847097 HCAPLUS

DN 134:88689

ED Entered STN: 05 Dec 2000

TI Thermal stability studies of binder materials in anodes for lithium-ion
batteries

AU Maleki, Hossein; Deng, Guoping; Kerzhner-Haller, Inna; Anani, Anaba;
Howard, Jason N.

CS Motorola Energy Systems Group, Lawrenceville, GA, 30043-6913, USA

SO Journal of the Electrochemical Society (2000), 147(12), 4470-4475

CODEN: JESOAN; ISSN: 0013-4651

PB Electrochemical Society

DT Journal

LA English

CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)

Section cross-reference(s): 57

AB The neg. electrode (NE) for lithium-ion batteries is
conventionally made by casting a mixture of various carbon materials with
polyvinylidene difluoride (PVDF) onto copper foil. Differential scanning
calorimetry and accelerating rate calorimetry were used to evaluate the
thermal stability of several lithiated NE materials: synthetic graphite
(SFG-44), mesocarbon microbeads (MCMB), lignin-based hard carbon
(HC), and mixts. of these materials. The exothermic heat generation of
lithiated NEs, in the absence of the electrolyte, is attributed
to the reaction of PVDF with lithiated carbon (LixC6). For all samples
here, the total exothermic heat generation increases with an increase in
lithiation content. The onset temperature for the thermal reaction of PVDF with
SFG-44 or MCMB does not depend on the lithiation content. However, this
onset temperature decreases as lithiation increases in HC electrodes. These
differences are attributed to structural differences between highly
graphitic SFG-44 and MCMB compared with the far less graphitic HC. Total
heat generation increases with PVDF binder content. An alternative
resin-based binder, phenol-formaldehyde phenolic-resin (C7H6O)n, is

proposed. Full or partial substitution of this material for PVDF lowers the exothermic heat of reaction of the binder agent with lithiated NE materials.

ST thermal stability binder anode lithium battery; polyvinylidene difluoride binder carbon anode battery

IT Battery anodes

Binders

Thermal decomposition

(thermal stability studies of binder materials in anodes for lithium-ion batteries)

IT Fluoropolymers, uses

RL: NUU (Other use, unclassified); USES (Uses)

(thermal stability studies of binder materials in anodes for lithium-ion batteries)

IT 7440-44-0, Carbon, uses 7782-42-5, Graphite, uses

RL: DEV (Device component use); USES (Uses)

(thermal stability studies of binder materials in anodes for lithium-ion batteries)

IT 24937-79-9, Polyvinylidene difluoride

RL: NUU (Other use, unclassified); USES (Uses)

(thermal stability studies of binder materials in anodes for lithium-ion batteries)

RE.CNT 35 THERE ARE 35 CITED REFERENCES AVAILABLE FOR THIS RECORD

RE

- (1) Arthur, D; Accelerating Rate Calorimetry (ARC) manual 1998
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1994, P49 HCAPLUS

(34) Zhang, Z; J Power Sources 1998, V70, P16 HCAPLUS

(35) Zhang, Z; The Electrochemical Society Proceeding Series 1995, PV 94-28, P165

L52 ANSWER 22 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1999:723302 HCAPLUS
DN 131:312498
ED Entered STN: 12 Nov 1999
TI Carbon based electrodes for reduction of sulfur or oxygen
IN Calver, Timothy James; Male, Stewart Ernest; Mitchell, Philip John; Whyte, Ian
PA National Power PLC, UK
SO PCT Int. Appl., 24 pp.
CODEN: PIXXD2
DT Patent
LA English
IC ICM H01M004-96
ICS H01M008-18
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 72

FAN.CNT 1

PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
WO 9957775	A1	19991111	WO 1999-GB1396	19990505
W:	AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM			
RW:	GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW, AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG			
GB 2337150	A1	19991110	GB 1998-9773	19980507
GB 2337150	B2	20000927		
CA 2332051	AA	19991111	CA 1999-2332051	19990505
AU 9937226	A1	19991123	AU 1999-37226	19990505
AU 759108	B2	20030403		
BR 9910266	A	20010109	BR 1999-10266	19990505
EP 1084518	A1	20010321	EP 1999-919438	19990505
EP 1084518	B1	20020724		
R:	AT, BE, CH, DE, DK, ES, FR, GB, GR, IT, LI, LU, NL, SE, MC, PT, IE, FI			
JP 2002513995	T2	20020514	JP 2000-547666	19990505
AT 221256	E	20020815	AT 1999-919438	19990505
PT 1084518	T	20021129	PT 1999-919438	19990505
ES 2178432	T3	20021216	ES 1999-919438	19990505
NZ 507971	A	20030228	NZ 1999-507971	19990505
TW 520406	B	20030211	TW 1999-88112085	19990716
ZA 2000006223	A	20020201	ZA 2000-6223	20001101
NO 2000005583	A	20001106	NO 2000-5583	20001106
BG 104920	A	20010831	BG 2000-104920	20001107
US 6511767	B1	20030128	US 2001-674847	20010524
PRAI GB 1998-9773	A	19980507		
WO 1999-GB1396	W	19990505		

CLASS

PATENT NO. CLASS PATENT FAMILY CLASSIFICATION CODES

WO 9957775 ICM H01M004-96
 ICS H01M008-18
 IPCI H01M0004-96 [ICM,6]; H01M0008-18 [ICS,6]
 ECLA H01M004/96; H01M008/18C4
 GB 2337150 IPCI H01M0004-96 [ICM,6]; C25B0011-12 [ICS,6]; H01M0002-38
 [ICS,6]; H01M0010-36 [ICS,6]
 ECLA H01M004/96; H01M008/18C4
 CA 2332051 IPCI H01M0004-96 [ICM,6]; H01M0008-18 [ICS,6]
 AU 9937226 IPCI H01M0004-96 [ICM,6]; H01M0008-18 [ICS,6]
 BR 9910266 IPCI H01M0004-96 [ICM,7]; H01M0008-18 [ICS,7]
 EP 1084518 IPCI H01M0004-96 [ICM,6]; H01M0008-18 [ICS,6]
 JP 2002513995 IPCI H01M0004-96 [ICM,7]; H01M0004-96 [ICS,7]; H01M0004-88
 [ICS,7]; H01M0012-08 [ICS,7]
 AT 221256 IPCI H01M0004-96 [ICM,7]; H01M0008-18 [ICS,7]
 PT 1084518 IPCI H01M0004-96 [ICM,7]; H01M0008-18 [ICS,7]
 ES 2178432 IPCI H01M0004-96 [ICM,7]; H01M0008-18 [ICS,7]
 NZ 507971 IPCI H01M0004-96 [ICM,7]; H01M0008-18 [ICS,7]
 TW 520406 IPCI C25B0011-12 [ICM,7]
 ZA 2000006223 IPCI H01M [ICM,7]
 NO 2000005583 IPCI H01M0004-96 [ICM,7]; H01M0008-18 [ICS,7]
 BG 104920 IPCI H01M0004-96 [ICM,7]; H01M0008-18 [ICS,7]
 US 6511767 IPCI H01M0004-96 [ICM,7]; H01M0004-88 [ICS,7]
 NCL 429/042.000; 429/044.000; 502/101.000
 ECLA H01M004/96; H01M008/18C4
 AB A carbon based electrode for the electrochem. reduction of sulfur or oxygen,
 which comprises an electrode core and, in elec. contact therewith, a
 structure comprising a porous particulate activated carbon bonded with a
polymeric binder material, characterized in that the structure is
 at least 1 mm thick, in that the particulate activated carbon is prepared
 from a **lignocellulosic** material. The material has the following
 properties: (i) a particle size in the range of from 200 to 850 μ m; (ii)
 a pore volume of from 0.45 to 1.0 cm³ per g; and (iii) a surface area in the
 range of from 800 to 1500 m²/g. The binder is used in an amount not
 exceeding 25% by weight based upon the mixture of activated carbon and binder
 material.
 ST carbon based electrode redn sulfur oxygen; redox **battery** carbon
 based electrode
 IT **Fluoropolymers**, uses
 RL: TEM (Technical or engineered material use); USES (Uses)
 (binder; carbon based electrodes for reduction of sulfur or oxygen)
 IT Reduction, electrochemical
 (carbon based electrodes for reduction of sulfur or oxygen)
 IT Carbon black, uses
 RL: MOA (Modifier or additive use); USES (Uses)
 (carbon based electrodes for reduction of sulfur or oxygen)
 IT Polysulfides
 RL: RCT (Reactant); RACT (Reactant or reagent)
 (carbon based electrodes for reduction of sulfur or oxygen)
 IT Fibers
 RL: DEV (Device component use); USES (Uses)
 (**lignocellulosic**, carbonized; carbon based electrodes for
 reduction of sulfur or oxygen)
 IT Secondary **batteries**
 (redox-flow; carbon based electrodes for reduction of sulfur or oxygen)
 IT 7440-44-0, Activated carbon, uses
 RL: DEV (Device component use); USES (Uses)
 (activated; carbon based electrodes for reduction of sulfur or oxygen)
 IT 9002-88-4, Polyethylene 9003-07-0, Polypropylene 24937-79-9
 RL: TEM (Technical or engineered material use); USES (Uses)
 (binder; carbon based electrodes for reduction of sulfur or oxygen)

IT 7782-42-5, Graphite, uses
RL: DEV (Device component use); USES (Uses)
(carbon based electrodes for reduction of sulfur or oxygen)

IT 7704-34-9, Sulfur, reactions 7782-44-7, Oxygen, reactions
RL: RCT (Reactant); RACT (Reactant or reagent)
(carbon based electrodes for reduction of sulfur or oxygen)

IT 7647-15-6, Sodium bromide, uses
RL: DEV (Device component use); USES (Uses)
(electrolyte containing Br and; carbon based electrodes for reduction of sulfur or oxygen)

IT 7726-95-6, Bromine, uses
RL: DEV (Device component use); USES (Uses)
(electrolyte containing NaBr and; carbon based electrodes for reduction of sulfur or oxygen)

IT 12034-39-8, Sodium sulfide Na_2S_4
RL: DEV (Device component use); USES (Uses)
(electrolyte; carbon based electrodes for reduction of sulfur or oxygen)

RE.CNT 8 THERE ARE 8 CITED REFERENCES AVAILABLE FOR THIS RECORD
RE

- (1) Anvar; FR 2404312 A 1979 HCAPLUS
- (2) Council of Scientific and Industrial Research; GB 1094914 A 1967 HCAPLUS
- (3) Dietrich, S; US 5098617 A 1992
- (4) Kureha Chemical Ind Co Ltd; EP 0767505 A 1997 HCAPLUS
- (5) Manoharan, R; Journal of Power Sources 1983, V10, P333 HCAPLUS
- (6) Zito, J; US 3920474 A 1975 HCAPLUS
- (7) Zito, R; US 4069371 A 1978 HCAPLUS
- (8) Zito, R; WO 9409525 A 1994 HCAPLUS

L52 ANSWER 23 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 2000:363588 HCAPLUS

DN 132:336895

ED Entered STN: 01 Jun 2000

TI High specific energy lead acid **batteries** for electric vehicles

IN Chen, Youxiao; Hu, Yong; Hu, Fengxiang

PA Taiji Energy Co., Ltd., Peop. Rep. China

SO Faming Zhuanli Shenqing Gongkai Shuomingshu, 9 pp.

CODEN: CNXXEV

DT Patent

LA Chinese

IC ICM H01M010-06

ICS H01M004-68; H01M004-36; H01M004-14

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	CN 1221991	A	19990707	CN 1997-119880	19971231
PRAI	CN 1997-119880		19971231		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
CN 1221991	ICM	H01M010-06
	ICS	H01M004-68; H01M004-36; H01M004-14
	IPCI	H01M0010-06 [ICM,6]; H01M0004-68 [ICS,6]; H01M0004-36 [ICS,6]; H01M0004-14 [ICS,6]

AB The **batteries** use cathodes having a Pb powder based active mass mixture containing H_2SO_4 (d. 1.25), PTFE 0.01-2, graphite 0.01-0.5, and K_2SO_4 0.001-0.05% applied on grids composed of Pb-(0.01-1.2) Sb or Bi-(0.01-2.0) As or Na-(0.01-1.0) Cu or Al-(0.01-2.0) Sn-(0.01-1.0)% Ag, Ce, or La

- alloys; and anodes having a Pb powder based active mass mixture containing H₂SO₄ (D. 1.25), BaSO₄ 0.1-0.3, Na lignosulfonate 0.1-0.3, α - and β -naphthoic acid 0.1-0.3 and Diffusing Agent No 0.01-0.1% applied on grids composed of PB-(0.02-0.12) Ca-(0.01-0.8) Sn-(0.01-0.05) Al-(0.01-0.05)% Ce alloys; and a H₂SO₄ (d 1.285) **electrolyte** solution containing 0.1-2 volume% H₃PO₄ and 10-100 mg K₂SO₄/L.
- ST elec vehicle maintenance free lead acid **battery**
- IT **Fluoropolymers**, uses
RL: DEV (Device component use); USES (Uses)
(comps. of active mass mixture and grid alloys for high specific energy lead acid **batteries** for elec. vehicles)
- IT **Battery electrolytes**
(**electrolytes** containing phosphoric acid and potassium sulfate for high specific energy lead acid **batteries** for elec. vehicles)
- IT 86-55-5, 1-Naphthoic acid 93-09-4, 2-Naphthoic acid 7439-92-1, Lead, uses 7727-43-7, Barium sulfate 7757-82-6, Sodium sulfate, uses 9002-84-0, Polytetrafluoroethylene 267665-72-5 267665-73-6
RL: DEV (Device component use); USES (Uses)
(comps. of active mass mixture and grid alloys for high specific energy lead acid **batteries** for elec. vehicles)
- IT 7664-93-9, Sulfuric acid, uses
RL: DEV (Device component use); USES (Uses)
(**electrolytes** containing phosphoric acid and potassium sulfate for high specific energy lead acid **batteries** for elec. vehicles)
- IT 7664-38-2, Phosphoric acid, uses 7778-80-5, Potassium sulfate, uses
RL: MOA (Modifier or additive use); USES (Uses)
(**electrolytes** containing phosphoric acid and potassium sulfate for high specific energy lead acid **batteries** for elec. vehicles)
- L52 ANSWER 24 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN DUPLICATE 3
AN 1997:173980 HCAPLUS
DN 126:214351
ED Entered STN: 14 Mar 1997
TI Role of **lignin** on depressing of anomalous growth of Pb negative electrode during charge-discharge cycling
AU Taguchi, Masami; Hirasawa, Tokiyoshi
CS Dep. Materials Eng., Akita Univ., Akita, 010, Japan
SO Nippon Kinzoku Gakkaishi (1997), 61(1), 77-82
CODEN: NIKGAV; ISSN: 0021-4876
PB Nippon Kinzoku Gakkai
DT Journal
LA Japanese
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
- AB The neg. electrode in the lead-acid **battery** contains a spongy Pb as the active material and a natural **polymer**, **lignin**. During repeated charge-discharge cycling in a sulfuric acid solution without **lignin**, an anomalous growth of acicular precipitate is observed on the neg. electrode. The growth is depressed by addition of **lignin** to the **electrolyte**. AES and XPS of the electrode after charge-discharge cycling show that the surface is made up of PbSO₄ single phase in the **lignin**-containing **electrolyte**, whereas the formation of metallic Pb occurs in the **electrolyte** without **lignin**. The **lignin** has both a water-repellent carbon chain and several water-acid functional groups., such as sulfonic acid. It absorbs the neg. electrode; the carbon chain is directed at the surface to be coated. The adsorbate depresses the redeposition of metallic Pb from Pb²⁺ ions on the

surface which can take place locally as a side reaction in charging. Consequently, the depressing of the anomalous growth can be explained by the hindrance to the redeposition.

ST lead deposition inhibition lead acid **battery**; **lignin**
lead deposition depressing **battery** anode

IT Secondary **batteries**
(lead-acid; **lignin** for depressing anomalous growth of lead anode during charge-discharge cycling)

IT **Battery electrolytes**
(**lignin** additive; **lignin** for depressing anomalous growth of lead anode during charge-discharge cycling)

IT **Battery anodes**
(porous lead-**lignin**; **lignin** for depressing anomalous growth of lead anode during charge-discharge cycling)

IT 9005-53-2, **Lignin**, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**lignin** for depressing anomalous growth of lead anode during charge-discharge cycling)

IT 7446-14-2, Lead sulfate
RL: FMU (Formation, unclassified); PEP (Physical, engineering or chemical process); FORM (Formation, nonpreparative); PROC (Process)
(**lignin** for depressing anomalous growth of lead anode during charge-discharge cycling)

IT 7439-92-1, Lead, uses
RL: DEV (Device component use); USES (Uses)
(porous, anodes; **lignin** for depressing anomalous growth of lead anode during charge-discharge cycling)

IT 9005-53-2, **Lignin**, uses
RL: DEV (Device component use); MOA (Modifier or additive use); USES (Uses)
(**lignin** for depressing anomalous growth of lead anode during charge-discharge cycling)

RN 9005-53-2 HCAPLUS
CN **Lignin** (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L52 ANSWER 25 OF 38 JAPIO (C) 2006 JPO on STN
AN 1995-296844 JAPIO
TI LEAD-ACID **BATTERY**
IN SASAKI MASAOKI; ARAKAWA MASAHIRO; HORII TORU; MURATA KAZUO
PA YUASA CORP
PI JP 07296844 A 19951110 Heisei
AI JP 1994-88227 (JP06088227 Heisei) 19940426
PRAI JP 1994-88227 19940426
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1995
IC ICM H01M010-06
ICS H01M010-08
AB PURPOSE: To reduce the amount by which the capacity of a negative plate decreases as a lead-acid **battery** is used in cycles by installing a slowly releasing body containing a shrink-proofing agent inside a **battery** jar.
CONSTITUTION: A shrink proofing agent composed of a **lignin** compound which is 0.2 parts by mass in 100 parts by mass of lead powder is added to the active material of the negative plate 3 of a lead-acid **battery**. A microporous film composed mainly of **polyvinyl** chloride with an average micropore diameter of 0.1 μ m and a thickness of 0.2mm is used as a slowly releasing body 5, and the shrink proofing agent composed of the **lignin** compound is wrapped in the microporous

film as if in a bag by 0.05 mass % of the **electrolyte**. When the **battery** is in use the shrink proofing agent is gradually eluted from the surface of the slowly releasing body 5 and dissolves into the **electrolyte** 9. The shrink proofing agent compensates for the functional degradation of the shrink proofing agent in the anode active material, thus enhancing the life of the negative plate 3.

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L52 ANSWER 26 OF 38 JAPIO (C) 2006 JPO on STN
AN 1995-220737 JAPIO
TI THIN TYPE **BATTERY** AND MANUFACTURE THEREOF
IN KAGAWA HIROSHI; KATO SHIRO
PA YUASA CORP
PI JP 07220737 A 19950818 Heisei
AI JP 1994-8228 (JP06008228 Heisei) 19940128
PRAI JP 1994-8228 19940128
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 1995
IC ICM H01M006-18
ICS H01M006-12; H01M006-16
AB PURPOSE: To supply a thin type **battery** arbitrarily separated of various electric capacity by arranging an active material and an **electrolyte**, between flat plate- shaped positive/negative electrode collectors having the same slit holes or the like, partitioned into a fixed pattern by an electric insulating adhesive material.
CONSTITUTION: In a negative pole collector 6, sprocket holes 7, slit holes 8 and terminal holes 9 are provided in a fixed pattern in both end regions. After a negative pole active material 10 is arranged in a region surrounded by the holes 8, 9, in a range a little larger than this region, a high **polymer** solid **electrolyte** 11 is print hardened, and on top of this in a little smaller region, a positive electrode active material 12 is arranged and electron beam hardened. A positive electrode collector 13, obtaining the same shape to the collector 6 when inverted, and an adhesive material 14 as an electric insulating material are bonded by **aligning** each sprocket hole 7 with a heat die roll of fixing a roll space. By fusing a connection part 15 of the hole 8 in each partition boundary part by laser, an individual thin type **battery** can be obtained.
COPYRIGHT: (C)1995,JPO

L52 ANSWER 27 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1990:594884 HCAPLUS
DN 113:194884
ED Entered STN: 23 Nov 1990
TI Ionic semiconductive materials and their applications
IN Peck, Robert Lester
PA T and G Corp., USA
SO Eur. Pat. Appl., 32 pp.
CODEN: EPXXDW
DT Patent
LA English
IC ICM H01L029-28
ICS H01M002-16; C25B013-08; B01D069-00
CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
	-----	----	-----	-----	-----
PI	EP 370149	A2	19900530	EP 1988-312035	19881219
	EP 370149	A3	19921125		

EP 370149	B1	19960626		
R: BE, CH, DE, ES, FR, GB, IT, LI, NL, SE				
CA 1309802	A1	19921103	CA 1988-586314	19881219
AU 8827066	A1	19900531	AU 1988-27066	19881220
AU 614565	B2	19910905		
JP 02152166	A2	19900612	JP 1989-2665	19890109
PRAI US 1988-275977	A	19881125		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
EP 370149	ICM	H01L029-28
	ICS	H01M002-16; C25B013-08; B01D069-00
	IPCI	H01L0029-28 [ICM,5]; H01M0002-16 [ICS,5]; C25B0013-08 [ICS,5]; B01D0069-00 [ICS,5]
	ECLA	A61K007/40; A61L026/00H7; B01D069/14B; C25B001/10; C25B013/08; H01M002/16C3; H01M004/02; H01M004/62B; H01M004/86; H01M006/24; H01M008/08; H01M008/18C4; H01M010/20; H01M012/06
CA 1309802	IPCI	H01L0029-28 [ICM,5]; H01M0002-16 [ICS,5]; C25B0013-08 [ICS,5]; B01D0069-00 [ICS,5]
AU 8827066	IPCI	B01D0013-00 [ICM,4]; B01J0013-02 [ICS,4]; H01M0002-16 [ICS,4]; H01M0006-02 [ICS,4]; H01M0004-76 [ICS,4]
JP 02152166	IPCI	H01M0006-18 [ICM,5]; C08L0033-00 [ICS,5]; H01B0001-12 [ICS,5]; H01M0002-16 [ICS,5]; C08L0003-00 [ICA,5]; C08L0061-04 [ICA,5]; C08L0071-02 [ICA,5]
AB		The materials, having ionic conductivity strongly depending on temperature, comprise a polymeric matrix, .apprx.10-50 weight% dispersed polymer of H2O-absorbing and bonding long-chain mols., and a coupling agent for facilitating bonding between the dispersed polymer and matrix. The matrix is selected from poly(vinylidene chloride), PVC, poly(vinylidene fluoride), polyethylene, polypropylene, polyurethane, ethylene-vinyl acetate copolymer , and PhOH-HCHO polymer ; the dispersed polymer is selected from PEO, poly(acrylic acid), polyacrylamide, hydroxyethyl cellulose, gelatin, pectin, cellulose and starch; and the coupling agent is selected from poly(acrylic acid), phenolic resin, cellulosic titanate, C, lignin , and SiO2. Batteries use these materials as separators and in their electrodes, the weight ratio of the semiconductor material:electrode material is .apprx.1.0-1.5. The ionic semiconductive materials are prepared by mixing and forming into a required shape. When inserted between H2SO4 and CuSO4 electrolytes , a p.d. is established across the materials and the current attributable to Cu2+ diffusion is ≤16%.
ST		battery separator ionic semiconductive polymer ; electrode battery ionic semiconductive polymer
IT		Carbon black, uses and miscellaneous Phenolic resins, uses and miscellaneous RL: USES (Uses) (ionic semiconductive materials containing coupling agents of, for battery electrodes and separators)
IT		Gelatins, uses and miscellaneous RL: USES (Uses) (ionic semiconductive materials containing dispersed, for battery electrodes and separators)
IT		Urethane polymers , uses and miscellaneous RL: PRP (Properties) (ionic semiconductive materials containing matrix of, for battery electrodes and separators)
IT		Batteries , secondary (ionic semiconductive materials for)
IT		Electrodes

(battery, ionic semiconductive materials for)

IT 9002-88-4
RL: USES (Uses)
(activated carbon-filled, ionic semiconductive materials containing matrix of, for **battery** electrodes and separators)

IT 7631-86-9, Silica, uses and miscellaneous 9005-53-2, Lignin, uses and miscellaneous 103850-22-2, LICA 12 107666-69-3, Plexar 100
RL: USES (Uses)
(ionic semiconductive materials containing coupling agents of, for **battery** electrodes and separators)

IT 9000-69-5, Pectin 9003-01-4D, Poly(acrylic acid), crosslinked 9003-05-8, Polyacrylamide 9004-34-6, Cellulose, uses and miscellaneous 9004-62-0, Hydroxyethyl cellulose 9005-25-8, Starch, uses and miscellaneous 9007-16-3, Carbomer 934 25322-68-3 120993-97-7, SGP 147
RL: USES (Uses)
(ionic semiconductive materials containing dispersed, for **battery** electrodes and separators)

IT 9002-85-1, Saran 864 9002-86-2, VC-54 9002-88-4, Polyethylene 9003-07-0D, Polypropene, maleated 9003-35-4 24937-78-8 24937-79-9, Poly(vinylidene fluoride) 83271-61-8, Polypropene
RL: PRP (Properties)
(ionic semiconductive materials containing matrix of, for **battery** electrodes and separators)

IT 9005-53-2, Lignin, uses and miscellaneous
RL: USES (Uses)
(ionic semiconductive materials containing coupling agents of, for **battery** electrodes and separators)

RN 9005-53-2 HCAPLUS
CN Lignin (8CI, 9CI) (CA INDEX NAME)

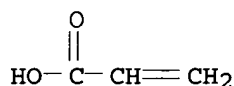
*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 9003-01-4D, Poly(acrylic acid), crosslinked 9004-62-0, Hydroxyethyl cellulose
RL: USES (Uses)
(ionic semiconductive materials containing dispersed, for **battery** electrodes and separators)

RN 9003-01-4 HCAPLUS
CN 2-Propenoic acid, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7
CMF C3 H4 O2



RN 9004-62-0 HCAPLUS
CN Cellulose, 2-hydroxyethyl ether (8CI, 9CI) (CA INDEX NAME)

CM 1

CRN 9004-34-6
CMF Unspecified
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 107-21-1

CMF C2 H6 O2

HO-CH₂-CH₂-OH

L52 ANSWER 28 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
AN 1989:234635 HCAPLUS
DN 110:234635
ED Entered STN: 25 Jun 1989
TI Ionic semiconductor materials and their applications
IN Peck, Robert L.
PA T and G. Corp., USA
SO U.S., 16 pp.
CODEN: USXXAM
DT Patent
LA English
IC ICM C25B013-00
INCL 204296000
CC 52-2 (Electrochemical, Radiational, and Thermal Energy
Technology)
Section cross-reference(s): 38, 61, 72, 76

FAN.CNT 2

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 4797190	A	19890110	US 1986-915994	19861006
	US 5055171	A	19911008	US 1990-542304	19900622
	US 5211827	A	19930518	US 1991-740061	19910805
PRAI	US 1986-915994	A2	19861006		
	US 1988-275977	B2	19881125		
	US 1990-542304	A3	19900622		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
US 4797190	ICM	C25B013-00
	INCL	204296000
	IPCI	C25B0013-00 [ICM,4]
	NCL	204/296.000; 429/033.000; 429/301.000; 429/303.000
US 5055171	IPCI	C25B0011-04 [ICM,5]
	NCL	204/290.050; 204/290.060; 204/290.070; 204/290.110; 204/291.000
US 5211827	IPCI	C25B0013-08 [ICM,5]
	NCL	204/252.000; 204/296.000; 524/502.000; 524/507.000; 524/510.000; 524/520.000; 524/521.000; 524/522.000

AB The materials having a temperature-dependent ion-transport rate comprise an inert man-made **polymeric** matrix and a hydrogel. The mols. of the hydrogel are substantially uniformly dispersed in the matrix to form a composite structure where the contact between hydrogel mols. is minimized by the matrix and the formation of channels is limited, the composite allowing the transfer of ions and preventing the passage of unionized matter. The hydrogel comprises .apprx.10-50 weight% of the dry composite, and the bonding between the hydrogel mols. and the matrix is sufficient to prevent their leach-out from the composite. The matrix is selected from

- poly(vinylidene chloride), PVC, poly(vinylidene fluoride), polyethylene, polypropylene, polyurethane, and PhOH-HCHO resin. The hydrogel is selected from polyethylene oxide, poly(acrylic acid) and polyacrylamide or devised from hydroxyethyl cellulose, gelatin, pectin, cellulose, and starch. When the composite seps. H₂SO₄ and CuSO₄ **electrolytes** and a p.d. is applied across the composite, the current attributable to Cu²⁺ diffusion is ≤16% of the equilibrium current. The composite materials may be used in **batteries** and fuel cells, for water purification, as solid **polymeric electrolytes**, in breathable waterproof coatings, and in numerous other applications for controlled moisture or ion transfer. Various applications of different materials are reported. A Zn-MnO₂ dry-cell **battery** with a separator constructed from 30% polyethylene oxide and 70% poly(vinylidene chloride) delivered a current equal to that of a conventional **battery**, and could be repeatably deeply discharged and charged, limited only by irregular replating of the Zn.
- ST semiconductor ionic **polymer** hydrogel; fuel cell ionic semiconductor; **battery** ionic semiconductor; coating waterproof ionic semiconductor; water purifn ionic semiconductor; polyethylene oxide polyvinylidene chloride **battery**; zinc **battery** separator ionic semiconductor; manganese dioxide zinc **battery** separator
- IT Phenolic resins, uses and miscellaneous
RL: USES (Uses)
(coupling agents, membranes containing, hydrogel-**polymer**, ionically conductive, for electrochem. and **electrolytic** cells)
- IT Urethane **polymers**, uses and miscellaneous
RL: USES (Uses)
(membranes containing hydrogel and, ionically conductive, for electrochem. and **electrolytic** cells)
- IT Coupling agents
(membranes containing, hydrogel-**polymer**, ionically conductive, for electrochem. and **electrolytic** cells)
- IT Gelatins, uses and miscellaneous
RL: USES (Uses)
(membranes of **polymers** and silica-containing, ionically conductive, for electrochem. and **electrolytic** cells)
- IT Electric resistance
(of hydrogel-**polymer** matrix composite membranes)
- IT Electrodes
(**battery**, encapsulated with hydrogel-**polymer** matrix composite)
- IT Carbon fibers, uses and miscellaneous
RL: USES (Uses)
(graphite, membranes containing, hydrogel-**polymer**, ionically conductive, for electrochem. and **electrolytic** cells, Fortafil 3)
- IT Gels
(hydro-, membranes containing **polymer** and, ionically conductive, for electrochem. and **electrolytic** cells)
- IT **Batteries**, secondary
(separators, hydrogel-**polymer** matrix)
- IT 7440-66-6, Zinc, uses and miscellaneous
RL: USES (Uses)
(anodes, encapsulated with hydrogel-**polymer** matrix composite, for **batteries**)
- IT 7440-44-0 7782-42-5
RL: USES (Uses)
(carbon fibers, graphite, membranes containing, hydrogel-**polymer**,

- ionically conductive, for electrochem. and electrolytic cells, Fortafil 3)
- IT 60676-86-0
RL: USES (Uses)
(catholyte, containing carbon, in electrochem. and electrolytic cells containing ionically conductive hydrogel-polymer membrane separators)
- IT 9005-53-2, Lignin, uses and miscellaneous 103850-22-2, LICA 12
RL: USES (Uses)
(coupling agent, membranes containing, hydrogel-polymer, ionically conductive, for electrochem. and electrolytic cells)
- IT 7440-32-6D, Titanium, neoalkoxy complexes
RL: USES (Uses)
(coupling agents, membranes containing, hydrogel-polymer, ionically conductive, for electrochem. and electrolytic cells, LICA 12)
- IT 11113-88-5, Silver oxide
RL: USES (Uses)
(electrodes, encapsulated with hydrogel-polymer matrix composite, for batteries)
- IT 9002-85-1, Poly(vinylidene chloride) 9002-86-2, Poly(vinyl chloride)
9003-07-0, Polypropylene 9003-35-4, Formaldehyde-phenol polymer
24937-79-9, Poly(vinylidene fluoride) 120993-93-3, RAP 184
RL: USES (Uses)
(membranes containing hydrogel and, ionically conductive, for electrochem. and electrolytic cells)
- IT 9000-69-5, Pectin 9003-01-4, Poly(acrylic acid) 9003-05-8
9004-34-6, Cellulose, uses and miscellaneous 9004-62-0, Hydroxyethyl cellulose 9005-25-8, Starch, uses and miscellaneous
25322-68-3 120993-97-7, SGP 147
RL: USES (Uses)
(membranes containing polymer and, ionically conductive, for electrochem. and electrolytic cells)
- IT 9005-25-8D, Starch, derivs.
RL: USES (Uses)
(membranes containing polymer and, ionically conductive, for electrochem. and electrolytic cells, SGP 147)
- IT 7440-44-0, Carbon, uses and miscellaneous
RL: USES (Uses)
(membranes containing powdered, hydrogel-polymer, ionically conductive, for electrochem. and electrolytic cells)
- IT 8061-51-6, Lignosol FTA 8062-15-5D,
Lignosulfonic acid, salts 24937-78-8D, maleated 107666-69-3, Plexar 100
RL: USES (Uses)
(membranes containing, hydrogel-polymer, ionically conductive, for electrochem. and electrolytic cells)
- IT 9005-53-2, Lignin, uses and miscellaneous
RL: USES (Uses)
(coupling agent, membranes containing, hydrogel-polymer, ionically conductive, for electrochem. and electrolytic cells)
- RN 9005-53-2 HCAPLUS
CN Lignin (8CI, 9CI) (CA INDEX NAME)
- *** STRUCTURE DIAGRAM IS NOT AVAILABLE ***
- IT 9003-01-4, Poly(acrylic acid) 9004-62-0, Hydroxyethyl cellulose

RL: USES (Uses)

(membranes containing **polymer** and, ionically conductive, for electrochem. and **electrolytic** cells)

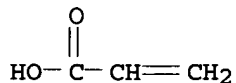
RN 9003-01-4 HCAPLUS

CN 2-Propenoic acid, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 79-10-7

CMF C3 H4 O2



RN 9004-62-0 HCAPLUS

CN Cellulose, 2-hydroxyethyl ether (8CI, 9CI) (CA INDEX NAME)

CM 1

CRN 9004-34-6

CMF Unspecified

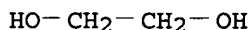
CCI PMS, MAN

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

CM 2

CRN 107-21-1

CMF C2 H6 O2

IT 8061-51-6, Lignosol FTA 8062-15-5D,
Lignosulfonic acid, salts

RL: USES (Uses)

(membranes containing, hydrogel-**polymer**, ionically conductive, for electrochem. and **electrolytic** cells)

RN 8061-51-6 HCAPLUS

CN Lignosulfonic acid, sodium salt (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

RN 8062-15-5 HCAPLUS

CN Lignosulfonic acid (9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

L52 ANSWER 29 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1984:54607 HCAPLUS

DN 100:54607

ED Entered STN: 12 May 1984

TI Poly(vinyl alcohol) **battery** separator containing inert filler

IN Sheibley, Dean W.; Hsu, Li Chen; Manzo; Michelle A.

PA United States National Aeronautics and Space Administration, USA

SO U. S. Pat. Appl., 14 pp. Avail. NTIS Order No. PAT-APPL-6-463 440.

CODEN: XAXXAV

DT Patent
LA English
CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)
Section cross-reference(s): 38, 76

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 463440	A0	19831125	US 1983-463440	19830203
PRAI	US 1983-463440		19830203		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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AB A particulate filler, inert to alkaline **battery electrolyte**, is incorporated in the separator in an amount of 1-20% based on the weight of the poly(vinyl alc.) (PVA) [9002-89-5], and is dispersed throughout the product. Incorporation of the filler enhances performance and increases cycle life of alkaline **batteries**. Suitable fillers include titanates, silicates, zirconates, aluminates, wood flour, **lignin**, and TiO₂. Particle size is .1 to .50μ. Thus, crosslinked PVA separators incorporated with Ca-Zr silicate and TiO₂ were prepared For a Ni-Zn **battery** with the separator, load voltages at different discharge rates were higher, and better capacity was attained from crosslinked PVA film with fillers than from PVA film without fillers. Resistivity of the film improved significantly with the addition of fillers as did the Zn dendrite penetration rate. Zincate diffusivity value improved somewhat with filler addition

ST nickel zinc **battery** separator; polyvinyl alc titania **battery** separator; calcium zirconium silicate **battery** separator

IT Clays, uses and miscellaneous
RL: USES (Uses)
(**battery** separators from crosslinked poly(vinyl alc.) containing, manufacture and properties of nickel-zinc)

IT Electric resistance
(of crosslinked poly(vinyl alc.) containing inert filler, for **battery** separators)

IT Wood
(flour, **battery** separators from crosslinked poly(vinyl alc.) containing, manufacture and properties of)

IT **Batteries**, secondary
(separators, nickel-zinc, crosslinked poly(vinyl alc.) with inert filler, manufacture and properties of)

IT 1344-95-2D, solid solns. with zirconium silicate 10101-52-7D, solid solns. with calcium silicate 12060-00-3D, solid solns. with lead zirconate 12060-01-4D, solid solns. with lead titanate 13463-67-7, uses and miscellaneous
RL: USES (Uses)
(**battery** separators from crosslinked poly(vinyl alc.) containing, manufacture and properties of nickel-zinc)

IT 9002-89-5P
RL: PREP (Preparation)
(crosslinked, **battery** separators from inert filler-containing, manufacture and properties of nickel-zinc)

IT 9002-89-5P
RL: PREP (Preparation)
(crosslinked, **battery** separators from inert filler-containing, manufacture and properties of nickel-zinc)

RN 9002-89-5 HCAPLUS
CN Ethenol, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 557-75-5

CMF C2 H4 O

 $\text{H}_2\text{C}=\text{CH}-\text{OH}$

L52 ANSWER 30 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN
 AN 1982:165660 HCAPLUS
 DN 96:165660
 ED Entered STN: 12 May 1984
 TI Poly(vinyl alcohol) **battery** separator containing an inert filler
 IN Sheibley, Dean W.; Hsu, Li Chen; Manzo, Michelle A.
 PA United States National Aeronautics and Space Administration, USA
 SO U. S. Pat. Appl., 14 pp.
 CODEN: XAXXAV
 DT Patent
 LA English
 CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy
 Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	US 272233	A0	19811204	US 1981-272233	19810610
PRAI	US 1981-272233		19810610		

CLASS

	PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
AB			A filler (insol. titanates, silicates, zirconates, aluminates, wood flour, lignin [9005-53-2], and TiO ₂) of particle size <50μ and inert to an alkaline battery electrolyte is incorporated in and dispersed through the battery separator. Thus, Ni-Zn batteries with filler-containing crosslinked poly(vinyl alc.) [9002-89-5] film separators showed higher load voltages at different discharge rates and attained better cell capacity than batteries with separators without fillers.
ST			nickel zinc battery separator filler; titania battery separator filler; silicate battery separator filler; zirconate battery separator filler; aluminate battery separator filler; lignin battery separator filler; wood flour battery separator filler; polyvinyl alc battery separator
IT			Batteries , secondary (separators, alkaline nickel-zinc, fillers-containing, crosslinked poly(vinyl alc.))
IT			9005-53-2, uses and miscellaneous 13463-67-7, uses and miscellaneous RL: USES (Uses) (battery separators from crosslinked poly(vinyl alc.) containing, alkaline nickel-zinc)
IT			9002-89-5 RL: USES (Uses) (crosslinked, battery separators, filler-containing alkaline nickel-zinc)
IT			9005-53-2, uses and miscellaneous RL: USES (Uses)

(**battery** separators from crosslinked poly(vinyl alc.) containing, alkaline nickel-zinc)

RN 9005-53-2 HCAPLUS

CN Lignin (8CI, 9CI) (CA INDEX NAME)

*** STRUCTURE DIAGRAM IS NOT AVAILABLE ***

IT 9002-89-5

RL: USES (Uses)

(crosslinked, **battery** separators, filler-containing alkaline nickel-zinc)

RN 9002-89-5 HCAPLUS

CN Ethenol, homopolymer (9CI) (CA INDEX NAME)

CM 1

CRN 557-75-5

CMF C2 H4 O

H₂C=CH-OH

L52 ANSWER 31 OF 38 HCAPLUS COPYRIGHT 2006 ACS on STN

AN 1975:608339 HCAPLUS

DN 83:208339

ED Entered STN: 12 May 1984

TI Sealed nickel-zinc storage **battery**

IN Sekido, Satoshi; Ohhira, Tsukasa; Yokoyama, Takao; Ikeda, Yutaka

PA Matsushita Electric Industrial Co., Ltd., Japan

SO Jpn. Kokai Tokkyo Koho, 4 pp.

CODEN: JKXXAF

DT Patent

LA Japanese

INCL 57C2; 57C21

CC 52-2 (**Electrochemical**, Radiational, and Thermal Energy Technology)

FAN.CNT 1

	PATENT NO.	KIND	DATE	APPLICATION NO.	DATE
PI	JP 50009725	A2	19750131	JP 1973-61661	19730531
PRAI	JP 1973-61661	A	19730531		

CLASS

PATENT NO.	CLASS	PATENT FAMILY CLASSIFICATION CODES
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JP 50009725	INCL	57C2; 57C21
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AB Sealed Ni-Zn storage **batteries** are obtained by (1) placing a Ni [7440-02-0] cathode in contact with a Ni or Ni-plated vessel, (2) filling the vessel with an **electrolyte** consisting of 4-6M KOH or a mixture of KOH and LiOH, and (3) using a catalytic gas electrode. These **batteries** have a long service life, high energy d., and a low self-discharging tendency. Thus, a **battery** was constructed using a sintered Ni cathode which was placed in contact with the inner walls of a Ni vessel. A Ni lead was spot welded to the Ni container. The anode was a Zn [7440-66-6]-paste electrode prepared by applying a paste consisting of ZnO [1314-13-2] powder to which was added Ca(OH)₂ [1305-62-0] 1.0 and Na **ligninsulfonate** 0.05% blended with aqueous poly(vinyl alc.). The cathode and anode were separated by porous polyethylene impregnated with Ca(OH)₂ (making contact with the cathode) and with cellophane (2 sheets in contact with the anode). The upper portion of the

battery was equipped with a neoprene rubber safety valve and a gas catalyst consisting of graphite impregnated with 1% Pd [7440-05-3] and waterproofed with a **copolymer** of C2F4 and hexafluoropropylene. The **battery** was then filled with the **electrolyte** and sealed. By placing the cathode in contact with the Ni container, the self-discharging tendency was reduced and cell life was extended. Pressure build up was small even with a 1-hr charging rate. In contrast, a **battery** not using the gas catalyst showed a large pressure buildup even on a 10-hr charging. By using an **electrolyte** concentration of 4-6M the discharge and lifetime characteristics were optimized.

ST nickel zinc storage **battery**; palladium catalyst sealed

battery

IT Catalysts and Catalysis

(graphite-palladium, for nickel zinc secondary **batteries**, gas accumulation prevention by)

IT **Batteries**, secondary

(nickel-zinc sealed, catalyst for)

IT 1305-62-0 1314-13-2, uses and miscellaneous

RL: USES (Uses)

(anodes containing, zinc, in sealed **batteries** with palladium catalyst)

IT 7440-66-6, uses and miscellaneous

RL: USES (Uses)

(anodes, containing calcium hydroxide and zinc oxide, in sealed **batteries** with palladium catalyst)

IT 7440-05-3, uses and miscellaneous

RL: CAT (Catalyst use); USES (Uses)

(catalysts, for gas buildup prevention, in nickel-zinc secondary **battery**)

IT 7440-02-0, uses and miscellaneous

RL: USES (Uses)

(cathodes, in sealed secondary **batteries** with zinc anode and palladium catalyst for pressure buildup prevention)

L52 ANSWER 32 OF 38 JAPIO (C) 2006 JPO on STN

AN 2005-116493 JAPIO

TI CHARGING METHOD OF LEAD STORAGE **BATTERY**

IN KOZAWA AKIYA; KUREO MANOIN; WADA MAMORU; MASE SHUNZO

PA MASE SHUNZO

KOZAWA AKIYA

PI JP 2005116493 A 20050428 Heisei

AI JP 2003-383150 (JP2003383150 Heisei) 20031008

PRAI JP 2003-383150 20031008

SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2005

IC ICM H01M010-44

ICS H01M010-08

AB PROBLEM TO BE SOLVED: To recover a lead storage **battery** whose **battery** property is deteriorated in a short time and to maintain the property for a long time.

SOLUTION: A pulse current is applied to the lead storage **battery** containing at least one of a group comprising polyacrylic acid, polyacrylic ester, **polyvinyl alcohol**, and particulate **lignin** in an **electrolyte** to charge it.

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L52 ANSWER 33 OF 38 JAPIO (C) 2006 JPO on STN

AN 2004-356076 JAPIO

TI REGENERATING METHOD FOR LEAD-ACID **BATTERY**

IN KOZAWA AKIYA; SUZUKI YOSHITAKA

PA MASE SHUNZO

KOZAWA AKIYA

PI JP 2004356076 A 20041216 Heisei
AI JP 2003-185790 (JP2003185790 Heisei) 20030526
PRAI JP 2003-185790 20030526
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2004
IC ICM H01M010-42
ICS H01M010-08
AB PROBLEM TO BE SOLVED: To regenerate a degraded lead storage
battery.
SOLUTION: A heavy current is applied into the **electrolyte** of a
lead storage **battery** for a long time, by adding at least one
organic addition agent from a group composed of a **polyvinyl**
alcohol, a polyacrylic acid, and **lignin**. Consequently, the
crystals of lead sulfate of a cathode are fine grained, and then the
specific gravity of the **electrolyte** is raised by charging.
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L52 ANSWER 34 OF 38 JAPIO (C) 2006 JPO on STN
AN 2004-356044 JAPIO
TI MANUFACTURING METHOD OF ION CONDUCTOR, AND MANUFACTURING METHOD OF
SECONDARY **BATTERY**
IN AKASAKA AKIFUMI; YAMAMOTO TOMOYA
PA CANON INC
PI JP 2004356044 A 20041216 Heisei
AI JP 2003-155136 (JP2003155136 Heisei) 20030530
PRAI JP 2003-155136 20030530
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2004
IC ICM H01B013-00
ICS C08F002-00; C08F002-44; C08F290-06; H01M010-40
ICA H01B001-06
AB PROBLEM TO BE SOLVED: To provide a manufacturing method of an ion
conductor which can be manufactured by a simple method at low cost having
a high ion conductivity and an excellent mechanical strength by further
enhancing **aligning** property of a **polymer** skeleton of
the ion conductor, and to provide a manufacturing method of a secondary
battery having excellent cycle life performance.
SOLUTION: The manufacturing method of the ion conductor mainly composed of
at least one kind of **polymer** compound and **electrolyte**,
having anisotropic characteristics in ion conductivity, has a
polymerization step of forming the ion conductor by a
polymerization reaction of a **polymer** precursor including
at least one kind of a monomer and the **electrolyte**. In the
polymerization step, during the **polymerization** reaction,
the precursor of the **polymer** is kept at a temperature not higher
than a temperature in which the monomer in the precursor shows the
aligning property.
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L52 ANSWER 35 OF 38 JAPIO (C) 2006 JPO on STN
AN 2003-331908 JAPIO
TI ADDITIVE FOR LEAD-ACID STORAGE **BATTERY**
IN HARADA HIROBUMI; YOKOI YOSHIYORI; KOZAWA AKIYA
PA TAKEHARA:KK
YOKOI KAIHATSU KK
KOZAWA AKIYA
PI JP 2003331908 A 20031121 Heisei
AI JP 2002-141177 (JP2002141177 Heisei) 20020516
PRAI JP 2002-141177 20020516
SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2003
IC ICM H01M010-08

AB PROBLEM TO BE SOLVED: To provide an additive for a lead-acid storage **battery** which can re-activate the **battery** quicker than conventional additive, effective for long period.
SOLUTION: Organic **polymer** and particulate **lignin** with diameter of 0.01-0.8 μm are added as the additive to the lead-acid storage **battery**. Differing from the soluble **lignin**, the particulate **lignin** is insoluble to electrolytic solution of the lead-acid storage **battery** and maintains suspended state in the solution. Because of this, the particulate **lignin** is stable against the electrolytic solution, hardly decomposed, and effective for a long period. Furthermore, generation of hydrogen at charging can be effectively prevented, and charging efficiency of a negative electrode can be improved by adding particulate coprecipitating mixture of lead sulfate or barium sulfate.
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L52 ANSWER 36 OF 38 JAPIO (C) 2006 JPO on STN

AN 2003-151618 JAPIO

TI LEAD-ACID **BATTERY** AND ADDITIVE FOR LEAD-ACID **BATTERY**

IN IKEDA SHOICHIRO; KOZAWA AKIYA; YOSHIO MASAYUKI

PA TAGAWA KAZUO

KOZAWA AKIYA

PI JP 2003151618 A 20030523 Heisei

AI JP 2001-382340 (JP2001382340 Heisei) 20011109

PRAI JP 2001-382340 20011109

SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2003

IC ICM H01M010-08

ICS H01M004-62

AB PROBLEM TO BE SOLVED: To prevent drop in capacity in charging and discharging of a lead-acid **battery**, decrease internal resistance, and increase the capacity of the **battery**.

SOLUTION: This lead-acid **battery** contains indium in an electrolyte and/or an electrode active material mold. An additive for the lead-acid **battery** contains indium. The additive for the lead-acid **battery** contains indium and at least one selected from a group comprising **polyvinyl** alcohol, polyethylene glycol, polyacrylic acid, and **lignin**.

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L52 ANSWER 37 OF 38 JAPIO (C) 2006 JPO on STN

AN 2001-313064 JAPIO

TI LEAD STORAGE **BATTERY** AND ITS ADDITIVE AGENT

IN IKEDA SHOICHIRO; YAMASHITA MASAMICHI; KOZAWA AKIYA

PA MASE SHUNZO

TAGAWA KAZUO

KOZAWA AKIYA

PI JP 2001313064 A 20011109 Heisei

AI JP 2000-169775 (JP2000169775 Heisei) 20000428

PRAI JP 2000-169775 20000428

SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001

IC ICM H01M010-08

ICS H01M004-14; H01M004-62

AB PROBLEM TO BE SOLVED: To prevent a degradation of a capacity accompanying a charge/ discharge electricity of a lead storage **battery**, to reduce an internal resistance, and to increase capacity of a **battery**.

SOLUTION: The lead storage **battery** includes polyacrylic acid or its ester, and **polyvinyl** alcohol in an electrolyte and/or a negative electrode active- material molding body. Moreover, an additive agent for the lead storage **battery** contains at least 1

kind in a group consisting of stannous sulfate, stannic sulfate, and colloid-like lead sulfate, and at least 1 kind in a groups consisting of polyacrylic acid, polyacrylic acid ester, and **polyvinyl** alcohol soluble **lignin**.

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L52 ANSWER 38 OF 38 JAPIO (C) 2006 JPO on STN

AN 2001-028263 JAPIO

TI LEAD-ACID **BATTERY** FORMATION METHOD

IN OMAE TAKAO; ISHIMOTO SHINJI

PA JAPAN STORAGE BATTERY CO LTD

PI JP 2001028263 A 20010130 Heisei

AI JP 1999-199904 (JP11199904 Heisei) 19990714

PRAI JP 1999-199904 19990714

SO PATENT ABSTRACTS OF JAPAN (CD-ROM), Unexamined Applications, Vol. 2001

IC ICM H01M004-22

ICS H01M010-06

AB PROBLEM TO BE SOLVED: To efficiently conduct formation, even at high specific gravity formation with low efficiency and increase low rate discharge capacity and high rate discharge capacity by keeping **electrolyte** temperature during current supply in a specified range, and increasing the quantity of supply electricity for formation to specified times the theoretical capacity of a positive electrode active material.

SOLUTION: **Electrolyte** temperature during current supply is kept at 50-70°C, and the quantity of supply electricity is made 150-250% that of the theoretical capacity of a positive electrode active material in the formation of a lead-acid **battery**. The total current supply time for formation, or the time kept at high temperature is preferably at most 10 hours, and thereby, even in the lead-acid **battery** in which the weight ratio of a negative electrode active material to the positive electrode active material is 0.5 or more but less than 1.0, **battery** formation can surely be conducted. When an organic additives, for example, a natural **polymer** such as **lignin** or its derivative, or a synthetic organic material is contained in a negative electrode plate, the decomposition of these materials is retarded, the drop in discharge performance of the negative electrode is prevented, and a lead-acid **battery** with good high rate discharge performance can be manufactured.

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